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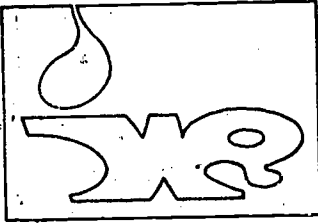
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ABSTRACT

This document contains the tables that are referred to but not included in the research monograph, "Improvement of Secondary Education Through Research: Five Longitudinal Case Studies." The monograph reports on two middle schools, one junior high school, and two senior high schools that were involved in the study project, which included development and research activities conducted over a four-year period, 1977-81. It is noted that the goal of each school's development activities was to start or refine administration-organization arrangements and improvement strategies. The research activities, it is pointed out, had four main objectives, all related to development of the school's improvement capability. Chapters 3 through 7 of the research monograph give the research results, and, in each chapter, summary information is presented. The tables on which the summary information is based appear in this publication. This document contains 133 tables. The first numeral of each table title refers to the chapter for which the information in the table is relevant. (JMK)

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Program Report 83-8

Supplementary Tabular Information to Accompany the Research Monograph *Improvement of Secondary Education Through Research: Five Longitudinal Case Studies*

by Herbert J. Klausmeier, Ronald C. Serlin, and
Monica C. Zindler

November 1982

Wisconsin Center for Education Research
an institute for the study of diversity in schooling

Program Report 83-8

SUPPLEMENTARY TABULAR INFORMATION TO ACCOMPANY
THE RESEARCH MONOGRAPH, IMPROVEMENT OF SECONDARY EDUCATION
THROUGH RESEARCH: FIVE LONGITUDINAL CASE STUDIES

by

Herbert J. Klausmeier, Ronald C. Serlin, and Monica C. Zindler

Report from the Program on
Student Diversity and School Processes

Wisconsin Center for Education Research
The University of Wisconsin
Madison, Wisconsin

November 1982

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Foreward

This paper contains the tables that are referred to but are not included in the research monograph, Improvement of Secondary Education Through Research: Five Longitudinal Case Studies.

Chapters 3 through 7 of the monograph give the results of the research, one chapter for each of five schools. In each chapter, summary information is presented in tables. The tables on which the summary information is based appear in this publication.

The first numeral of each table title refers to the chapter for which the information in the table is relevant. Including the tables in this publication rather than in the monograph improves its readability and permits it to be sold at a lower cost.

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Table 3.1. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 7 Groups: Steuben Middle School

| | Word Knowledge | | | | | | Reading | | | | | | Reading Total | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|------|----------------|-----------|-------|-------------|-----------|------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 227 | 42.83 | 15.48 | 227 | 24.33 | 9.84 | 226 | 42.94 | 15.44 | 226 | 20.12 | 8.86 | 226 | 42.94 | 15.44 | 226 | 44.54 | 17.86 |
| Male | 117 | 42.83 | 15.99 | 117 | 24.80 | 9.81 | 116 | 43.03 | 15.90 | 116 | 20.28 | 8.97 | 116 | 43.03 | 15.90 | 116 | 45.23 | 17.94 |
| Female | 110 | 42.84 | 16.00 | 110 | 23.84 | 9.88 | 110 | 42.84 | 15.00 | 110 | 19.96 | 8.79 | 110 | 42.84 | 15.00 | 110 | 43.80 | 17.84 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 324 | 39.74 | 14.84 | 324 | 21.26 | 8.91 | 327 | 39.69 | 14.87 | 327 | 16.94 | 7.99 | 324 | 39.74 | 14.84 | 324 | 38.23 | 16.14 |
| Male | 142 | 39.54 | 15.85 | 142 | 22.15 | 9.48 | 145 | 39.44 | 15.92 | 145 | 17.61 | 8.71 | 142 | 39.54 | 15.85 | 142 | 39.85 | 17.55 |
| Female | 182 | 39.90 | 14.03 | 182 | 20.57 | 8.39 | 182 | 39.90 | 14.03 | 182 | 16.40 | 7.34 | 182 | 39.90 | 14.03 | 182 | 36.96 | 14.87 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 291 | 40.69 | 13.76 | 291 | 22.93 | 8.85 | 290 | 40.73 | 13.76 | 290 | 18.84 | 8.49 | 290 | 40.73 | 13.76 | 290 | 41.84 | 16.58 |
| Male | 139 | 39.77 | 13.74 | 139 | 22.72 | 8.57 | 138 | 39.86 | 13.75 | 138 | 18.06 | 8.29 | 138 | 39.86 | 13.75 | 138 | 40.90 | 16.07 |
| Female | 152 | 41.53 | 13.77 | 152 | 23.13 | 9.12 | 152 | 41.53 | 13.77 | 152 | 19.56 | 8.63 | 152 | 41.53 | 13.77 | 152 | 42.69 | 17.04 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 307 | 43.70 | 13.53 | 307 | 24.38 | 8.40 | 307 | 43.70 | 13.53 | 307 | 20.49 | 8.11 | 307 | 43.69 | 13.53 | 307 | 44.87 | 15.61 |
| Male | 143 | 42.31 | 12.86 | 143 | 23.94 | 7.93 | 143 | 42.31 | 12.86 | 143 | 19.83 | 7.34 | 143 | 42.31 | 12.86 | 143 | 43.76 | 14.27 |
| Female | 164 | 44.91 | 14.01 | 164 | 24.77 | 8.79 | 164 | 44.91 | 14.01 | 164 | 21.07 | 8.70 | 164 | 44.91 | 14.01 | 164 | 45.84 | 16.67 |

Table 3.1. (Continued):

| | Language | | | | | | Spelling | | | | | | Math Computation | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|------|------------------|-----------|-------|-------------|-----------|------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| | | | | | | | | | | | | | | | | | | |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 224 | 42.84 | 15.55 | 224 | 39.16 | 15.94 | 222 | 42.82 | 15.46 | 222 | 26.46 | 6.97 | 223 | 42.93 | 15.51 | 223 | 18.44 | 6.56 |
| Male | 117 | 42.83 | 15.99 | 117 | 37.49 | 16.04 | 114 | 43.12 | 16.03 | 114 | 26.18 | 7.67 | 114 | 43.12 | 16.03 | 114 | 18.27 | 6.64 |
| Female | 107 | 42.86 | 15.12 | 107 | 40.99 | 15.71 | 108 | 42.50 | 14.91 | 108 | 26.76 | 6.17 | 109 | 42.72 | 15.02 | 109 | 18.62 | 6.51 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 325 | 39.76 | 14.90 | 325 | 39.68 | 15.69 | 322 | 39.71 | 15.01 | 322 | 26.83 | 7.24 | 322 | 39.60 | 14.98 | 322 | 20.12 | 6.72 |
| Male | 144 | 39.43 | 16.03 | 144 | 38.82 | 15.56 | 144 | 39.28 | 16.12 | 144 | 26.56 | 7.27 | 143 | 39.11 | 16.09 | 143 | 19.83 | 7.12 |
| Female | 181 | 40.02 | 13.98 | 181 | 40.37 | 15.79 | 178 | 40.05 | 14.09 | 178 | 27.05 | 7.22 | 179 | 39.99 | 14.07 | 179 | 20.35 | 6.40 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 291 | 40.69 | 13.76 | 291 | 41.34 | 15.17 | 288 | 40.82 | 13.77 | 288 | 26.53 | 7.21 | 290 | 40.68 | 13.83 | 290 | 22.83 | 6.32 |
| Male | 139 | 39.77 | 13.74 | 139 | 39.32 | 14.00 | 136 | 40.02 | 13.78 | 136 | 24.93 | 6.90 | 138 | 39.79 | 13.81 | 138 | 22.66 | 6.36 |
| Female | 152 | 41.53 | 13.77 | 152 | 43.18 | 15.98 | 152 | 41.53 | 13.77 | 152 | 27.97 | 7.20 | 152 | 41.48 | 13.84 | 152 | 22.99 | 6.31 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 306 | 43.65 | 13.52 | 306 | 46.85 | 15.24 | 303 | 43.66 | 13.59 | 303 | 28.19 | 6.97 | 305 | 43.71 | 13.56 | 305 | 23.98 | 6.50 |
| Male | 143 | 42.31 | 12.86 | 143 | 43.69 | 13.90 | 141 | 42.30 | 12.93 | 141 | 27.03 | 6.75 | 142 | 42.35 | 12.90 | 142 | 22.83 | 6.20 |
| Female | 163 | 44.82 | 14.01 | 163 | 49.63 | 15.86 | 162 | 44.85 | 14.08 | 162 | 29.20 | 7.02 | 163 | 44.90 | 14.05 | 163 | 24.98 | 6.61 |

Table 3.1. (Continued):

| | Math Concepts | | | | | | Math Problem Solving | | | | | | Math Total | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|------|----------------------|-----------|-------|-------------|-----------|------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| | | | | | | | | | | | | | | | | | | |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 222 | 42.95 | 15.54 | 222 | 17.94 | 6.77 | 219 | 43.16 | 15.54 | 219 | 15.41 | 6.44 | 219 | 43.16 | 15.54 | 219 | 52.00 | 18.24 |
| Male | 114 | 43.12 | 16.03 | 114 | 17.94 | 7.53 | 111 | 43.55 | 16.02 | 111 | 15.83 | 6.92 | 111 | 43.55 | 16.02 | 111 | 52.39 | 19.50 |
| Female | 108 | 42.77 | 15.08 | 108 | 17.94 | 5.90 | 108 | 42.77 | 15.08 | 108 | 14.97 | 5.90 | 108 | 42.77 | 15.08 | 108 | 51.59 | 16.93 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 320 | 39.74 | 14.92 | 320 | 18.15 | 7.19 | 323 | 39.66 | 15.00 | 323 | 14.90 | 6.26 | 320 | 39.74 | 14.92 | 320 | 53.26 | 18.49 |
| Male | 142 | 39.23 | 16.09 | 142 | 18.96 | 7.20 | 144 | 39.25 | 16.12 | 144 | 15.69 | 6.57 | 142 | 39.23 | 16.07 | 142 | 54.61 | 19.07 |
| Female | 178 | 40.15 | 13.96 | 178 | 17.50 | 7.13 | 179 | 39.99 | 14.07 | 179 | 14.26 | 5.94 | 178 | 40.15 | 13.96 | 178 | 52.19 | 18.00 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 289 | 40.66 | 13.85 | 289 | 20.51 | 6.54 | 289 | 40.69 | 13.85 | 289 | 15.88 | 5.95 | 288 | 40.67 | 13.87 | 288 | 59.25 | 16.85 |
| Male | 137 | 39.74 | 13.85 | 137 | 20.39 | 6.66 | 137 | 39.81 | 13.86 | 137 | 15.77 | 5.90 | 136 | 39.76 | 13.90 | 136 | 58.90 | 16.96 |
| Female | 152 | 41.48 | 13.84 | 152 | 20.61 | 6.45 | 152 | 41.48 | 13.84 | 152 | 15.97 | 6.01 | 152 | 41.48 | 13.84 | 152 | 59.57 | 16.79 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 303 | 43.78 | 13.57 | 303 | 20.75 | 6.33 | 303 | 43.70 | 13.60 | 303 | 16.91 | 5.75 | 302 | 43.76 | 13.59 | 302 | 64.85 | 41.44 |
| Male | 141 | 42.35 | 12.94 | 141 | 19.89 | 6.22 | 140 | 42.30 | 12.97 | 140 | 16.30 | 5.53 | 140 | 42.30 | 12.97 | 140 | 59.01 | 15.89 |
| Female | 162 | 44.01 | 14.02 | 162 | 21.49 | 6.35 | 163 | 44.90 | 14.05 | 163 | 17.43 | 5.89 | 162 | 44.01 | 14.02 | 162 | 69.89 | 54.20 |

Table 3.2. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 8 Groups: Steuben Middle School

| | Word Knowledge | | | | | | Reading | | | | | | Reading Total | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 230 | 42.31 | 15.11 | 230 | 26.73 | 9.40 | 229 | 42.29 | 15.14 | 229 | 22.63 | 9.43 | 229 | 42.29 | 15.14 | 229 | 49.34 | 17.93 |
| Male | 104 | 43.88 | 16.01 | 104 | 27.96 | 10.37 | 103 | 43.86 | 16.08 | 103 | 24.01 | 10.08 | 103 | 43.86 | 16.08 | 103 | 51.94 | 19.64 |
| Female | 126 | 41.01 | 14.26 | 126 | 25.71 | 8.43 | 126 | 41.01 | 14.26 | 126 | 21.50 | 8.75 | 126 | 41.01 | 14.26 | 126 | 47.21 | 16.16 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 237 | 43.64 | 14.97 | 237 | 28.45 | 9.63 | 237 | 43.64 | 14.97 | 237 | 23.21 | 9.05 | 237 | 43.64 | 14.97 | 237 | 51.66 | 17.88 |
| Male | 120 | 43.26 | 15.67 | 120 | 28.83 | 9.85 | 120 | 43.26 | 15.67 | 120 | 23.21 | 9.21 | 120 | 43.26 | 15.67 | 120 | 52.04 | 18.18 |
| Female | 117 | 44.03 | 14.28 | 117 | 28.06 | 9.43 | 117 | 44.03 | 14.28 | 117 | 23.21 | 8.92 | 117 | 44.03 | 14.28 | 117 | 51.27 | 17.64 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 272 | 40.31 | 15.08 | 272 | 25.84 | 9.71 | 272 | 40.31 | 15.08 | 272 | 21.93 | 9.10 | 272 | 40.31 | 15.08 | 272 | 47.77 | 17.95 |
| Male | 121 | 40.10 | 16.47 | 121 | 26.70 | 10.03 | 121 | 40.10 | 16.47 | 121 | 22.27 | 9.40 | 121 | 40.10 | 16.47 | 121 | 48.98 | 18.47 |
| Female | 151 | 40.47 | 13.91 | 151 | 25.15 | 9.42 | 151 | 40.47 | 13.91 | 151 | 21.66 | 8.87 | 151 | 40.47 | 13.91 | 151 | 46.81 | 17.52 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 225 | 41.64 | 13.83 | 225 | 29.33 | 9.88 | 227 | 41.58 | 13.90 | 227 | 22.90 | 8.70 | 225 | 41.64 | 13.83 | 225 | 52.20 | 17.37 |
| Male | 101 | 41.43 | 13.97 | 101 | 29.85 | 9.73 | 102 | 41.54 | 13.95 | 102 | 22.80 | 9.02 | 101 | 41.43 | 13.97 | 101 | 52.62 | 17.60 |
| Female | 124 | 41.81 | 13.77 | 124 | 28.90 | 10.02 | 125 | 41.61 | 13.91 | 125 | 22.98 | 8.46 | 124 | 41.81 | 13.77 | 124 | 51.86 | 17.24 |

Table 3.2. (Continued):

| | Language | | | | | | Spelling | | | | | | Math Computation | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|------|------------------|-----------|-------|-------------|-----------|------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 228 | 42.14 | 15.25 | 228 | 44.87 | 14.88 | 232 | 41.99 | 15.28 | 232 | 27.66 | 7.57 | 227 | 42.11 | 15.29 | 227 | 21.35 | 7.55 |
| Male | 103 | 43.63 | 16.30 | 103 | 42.91 | 15.57 | 107 | 42.98 | 16.43 | 107 | 25.98 | 7.65 | 104 | 42.88 | 16.65 | 104 | 21.44 | 8.21 |
| Female | 125 | 40.92 | 14.28 | 125 | 46.49 | 14.14 | 125 | 41.14 | 14.23 | 125 | 29.10 | 7.23 | 123 | 41.45 | 14.07 | 123 | 21.27 | 6.97 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 239 | 43.51 | 15.00 | 239 | 46.65 | 16.15 | 239 | 43.56 | 15.05 | 239 | 29.63 | 6.55 | 236 | 43.53 | 15.01 | 236 | 23.06 | 7.06 |
| Male | 122 | 43.01 | 15.70 | 122 | 44.48 | 16.50 | 121 | 42.98 | 15.80 | 121 | 28.41 | 6.71 | 117 | 42.79 | 15.73 | 117 | 22.85 | 7.31 |
| Female | 117 | 44.03 | 14.28 | 117 | 48.91 | 15.51 | 118 | 44.14 | 14.28 | 118 | 30.88 | 6.16 | 119 | 44.27 | 14.28 | 119 | 23.26 | 6.83 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 267 | 40.54 | 15.07 | 267 | 45.73 | 16.52 | 267 | 40.60 | 14.98 | 267 | 29.43 | 7.06 | 266 | 40.56 | 14.99 | 266 | 23.94 | 7.35 |
| Male | 121 | 40.10 | 16.47 | 121 | 44.24 | 16.64 | 118 | 40.43 | 16.41 | 118 | 28.36 | 7.65 | 116 | 40.23 | 16.47 | 116 | 23.83 | 7.50 |
| Female | 146 | 40.90 | 13.86 | 146 | 46.96 | 16.38 | 149 | 40.72 | 13.80 | 149 | 30.28 | 6.46 | 150 | 40.81 | 13.79 | 150 | 24.02 | 7.25 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 226 | 41.43 | 13.93 | 226 | 47.73 | 14.77 | 223 | 41.69 | 13.74 | 223 | 30.52 | 6.93 | 223 | 41.69 | 13.74 | 223 | 25.63 | 6.51 |
| Male | 102 | 41.54 | 13.95 | 102 | 46.82 | 14.07 | 101 | 41.60 | 13.65 | 101 | 29.92 | 6.31 | 101 | 41.60 | 13.65 | 101 | 26.22 | 6.53 |
| Female | 124 | 41.34 | 13.96 | 124 | 48.48 | 15.34 | 122 | 41.76 | 13.88 | 122 | 31.01 | 7.39 | 122 | 41.76 | 13.88 | 122 | 25.15 | 6.48 |

Table 3.2. (Continued):

| | Math Concepts | | | | | | Math Problem Solving | | | | | | Math Total | | | | | |
|---------|----------------|-----------|-------|-------------|-----------|------|----------------------|-----------|-------|-------------|-----------|------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| | | | | | | | | | | | | | | | | | | |
| 1977-78 | | | | | | | | | | | | | | | | | | |
| Total | 229 | 42.01 | 15.33 | 229 | 18.07 | 7.02 | 229 | 42.00 | 15.33 | 229 | 20.88 | 7.63 | 222 | 42.31 | 15.31 | 222 | 60.74 | 20.73 |
| Male | 105 | 42.90 | 16.57 | 105 | 18.67 | 7.61 | 103 | 43.20 | 16.47 | 103 | 20.94 | 8.42 | 101 | 43.18 | 16.64 | 101 | 61.46 | 22.87 |
| Female | 124 | 41.26 | 14.23 | 124 | 17.56 | 6.47 | 126 | 41.02 | 14.33 | 126 | 20.83 | 6.94 | 121 | 41.59 | 14.14 | 121 | 60.15 | 18.83 |
| 1978-79 | | | | | | | | | | | | | | | | | | |
| Total | 236 | 43.53 | 15.01 | 236 | 18.41 | 6.72 | 235 | 43.55 | 15.04 | 235 | 22.53 | 7.55 | 235 | 43.55 | 15.04 | 235 | 64.06 | 20.14 |
| Male | 117 | 42.79 | 15.73 | 117 | 18.56 | 6.68 | 116 | 42.81 | 15.80 | 116 | 22.42 | 8.00 | 116 | 42.81 | 15.80 | 116 | 63.96 | 20.83 |
| Female | 119 | 44.27 | 14.28 | 119 | 18.25 | 6.78 | 119 | 44.27 | 14.28 | 119 | 22.64 | 7.12 | 119 | 44.27 | 14.28 | 119 | 64.15 | 19.52 |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 267 | 40.58 | 14.95 | 267 | 18.03 | 6.98 | 265 | 40.58 | 15.02 | 265 | 21.91 | 7.38 | 264 | 40.64 | 15.01 | 264 | 64.08 | 20.16 |
| Male | 118 | 40.15 | 16.36 | 118 | 18.52 | 7.45 | 116 | 40.23 | 16.47 | 116 | 21.86 | 7.80 | 116 | 40.23 | 16.47 | 116 | 64.26 | 21.52 |
| Female | 149 | 40.92 | 13.78 | 149 | 17.64 | 6.57 | 149 | 40.85 | 13.83 | 149 | 21.95 | 7.06 | 148 | 40.96 | 13.82 | 148 | 63.93 | 19.10 |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 223 | 41.69 | 13.74 | 223 | 19.29 | 6.34 | 223 | 41.69 | 13.74 | 223 | 23.14 | 6.71 | 223 | 41.69 | 13.74 | 223 | 68.07 | 17.89 |
| Male | 101 | 41.60 | 13.65 | 101 | 19.85 | 6.44 | 101 | 41.60 | 13.65 | 101 | 23.65 | 6.90 | 101 | 41.60 | 13.65 | 101 | 69.72 | 18.13 |
| Female | 122 | 41.76 | 13.88 | 122 | 18.83 | 6.24 | 122 | 41.76 | 13.88 | 122 | 22.72 | 6.56 | 122 | 41.76 | 13.88 | 122 | 66.70 | 17.65 |

Table 3.3. Adjusted Means in Educational Achievement for Four Successive Grade 7 Groups with Mental Ability Scores:
Steuben Middle School

| | Word Knowledge | | Reading | | Reading Total | | Language | |
|---------|-------------------|-----------|---------|-----------|------------------|-----------|----------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| 1977-78 | | | | | | | | |
| Total | 227 | 23.79 | 226 | 19.60 | 226 | 43.44 | 224 | 38.21 |
| Male | 117 | 24.26 | 116 | 19.71 | 116 | 44.05 | 117 | 36.55 |
| Female | 110 | 23.29 | 110 | 19.48 | 110 | 42.79 | 107 | 40.03 |
| 1978-79 | | | | | | | | |
| Total | 324 | 22.14 | 327 | 17.74 | 324 | 39.92 | 325 | 41.17 |
| Male | 142 | 23.13 | 145 | 18.52 | 142 | 41.72 | 144 | 40.56 |
| Female | 182 | 21.37 | 182 | 17.12 | 182 | 38.51 | 181 | 41.65 |
| 1979-80 | | | | | | | | |
| Total | 291 | 23.38 | 290 | 19.22 | 290 | 42.66 | 291 | 42.09 |
| Male | 139 | 23.59 | 138 | 18.79 | 138 | 42.48 | 139 | 40.79 |
| Female | 152 | 23.19 | 152 | 19.61 | 152 | 42.82 | 152 | 43.27 |
| 1980-81 | | | | | | | | |
| Total | 307 | 23.44 | 307 | 19.66 | 307 | 43.11 | 306 | 45.27 |
| Male | 143 | 23.63 | 143 | 19.56 | 143 | 43.22 | 143 | 43.16 |
| Female | 164 | 23.27 | 164 | 19.74 | 164 | 43.03 | 163 | 47.12 |

Table 3.3. (Continued):

| | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|---------|----------|-----------|---------------------|-----------|------------------|-----------|-------------------------|-----------|---------------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| 1977-78 | | | | | | | | | | |
| Total | 222 | 26.17 | 223 | 18.09 | 222 | 17.55 | 219 | 14.98 | 219 | 50.75 |
| Male | 114 | 25.82 | 114 | 17.86 | 114 | 17.50 | 111 | 15.30 | 111 | 50.82 |
| Female | 108 | 26.55 | 109 | 18.33 | 108 | 17.61 | 108 | 14.66 | 108 | 50.69 |
| 1978-79 | | | | | | | | | | |
| Total | 322 | 27.31 | 322 | 20.67 | 320 | 18.74 | 323 | 15.47 | 320 | 54.95 |
| Male | 144 | 27.15 | 143 | 20.51 | 142 | 19.71 | 144 | 16.30 | 142 | 56.73 |
| Female | 178 | 27.45 | 179 | 20.80 | 178 | 17.96 | 179 | 14.73 | 178 | 53.53 |
| 1979-80 | | | | | | | | | | |
| Total | 288 | 26.74 | 290 | 23.09 | 289 | 20.81 | 289 | 16.16 | 288 | 60.14 |
| Male | 136 | 25.33 | 138 | 23.16 | 137 | 20.97 | 137 | 16.30 | 136 | 60.56 |
| Female | 152 | 28.00 | 152 | 23.03 | 152 | 20.67 | 152 | 16.03 | 152 | 59.77 |
| 1980-81 | | | | | | | | | | |
| Total | 303 | 27.69 | 305 | 23.41 | 303 | 20.11 | 303 | 16.41 | 302 | 60.06 |
| Male | 141 | 26.87 | 142 | 22.63 | 141 | 19.69 | 140 | 16.12 | 140 | 58.51 |
| Female | 162 | 28.40 | 163 | 24.09 | 162 | 20.48 | 163 | 16.66 | 162 | 61.41 |

Table 3.4. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 7 Groups with Mental Ability Scores: Steuben Middle School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|---------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1140 | 1148 |
| Mean Square | 50109.64 | 128.58 | 213.52 | 32.77 | 36.27 | 81.65 |
| F | 1381.57 | 3.55 | 5.89 | .90 | | |
| P | <.001 | .014 | .015 | .439 | | |
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1141 | 1149 |
| Mean Square | 39421.84 | 221.66 | 7.09 | 67.73 | 34.69 | 71.17 |
| F | 1136.54 | 6.39 | .20 | 1.95 | | |
| P | <.001 | <.001 | .651 | .119 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1138 | 1146 |
| Mean Square | 177729.69 | 674.33 | 324.61 | 189.42 | 115.00 | 277.93 |
| F | 1545.48 | 5.86 | 2.83 | 1.65 | | |
| P | <.001 | .001 | .093 | .177 | | |
| <u>Language</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1137 | 1145 |
| Mean Square | 146395.78 | 2102.80 | 2113.47 | 122.02 | 108.12 | 248.77 |
| F | 1354.04 | 19.45 | 19.55 | 1.13 | | |
| P | <.001 | <.001 | <.001 | .336 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1126 | 1134 |
| Mean Square | 14669.57 | 109.98 | 474.89 | 78.66 | 36.78 | 50.89 |
| F | 398.82 | 2.99 | 12.91 | 2.14 | | |
| P | <.001 | .030 | <.001 | .094 | | |

Table 3.4. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------------|-----------|---------|--------|--------|----------|--------|
| <u>Math Computation</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1131 | 1139 |
| Mean Square | 17582.20 | 1532.79 | 74.13 | 33.91 | 26.97 | 47.02 |
| F | 652.00 | 56.84 | 2.75 | 1.26 | | |
| P | <.001 | <.001 | .098 | .288 | | |
| <u>Math Concepts</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1125 | 1133 |
| Mean Square | 21394.32 | 526.64 | 22.72 | 87.63 | 26.01 | 46.69 |
| F | 822.57 | 20.25 | .87 | 3.37 | | |
| P | <.001 | <.001 | .35 | .018 | | |
| <u>Math Problem Solving</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1125 | 1133 |
| Mean Square | 18784.43 | 102.69 | 69.81 | 63.57 | 20.03 | 37.40 |
| F | 937.70 | 5.13 | 3.49 | 3.17 | | |
| P | <.001 | .002 | .024 | .024 | | |
| <u>Math Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 1120 | 1128 |
| Mean Square | 170057.72 | 5043.04 | 25.68 | 482.57 | 154.81 | 323.03 |
| F | 1098.48 | 32.58 | .166 | 3.12 | | |
| P | <.001 | <.001 | .684 | .025 | | |

Table 3.5. Adjusted Means In Educational Achievement For Four Successive Grade 8 Groups with Mental Ability Scores:
Steuben Middle School.

| | Word Knowledge | | Reading | | Reading Total | | Language | |
|---------|-------------------|-----------|---------|-----------|------------------|-----------|----------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| 1977-78 | | | | | | | | |
| Total | 230 | 26.53 | 229 | 22.45 | 229 | 48.98 | 228 | 44.66 |
| Male | 104 | 26.99 | 103 | 23.13 | 103 | 50.10 | 103 | 41.53 |
| Female | 126 | 26.15 | 126 | 21.90 | 126 | 48.06 | 125 | 47.23 |
| 1978-79 | | | | | | | | |
| Total | 237 | 27.60 | 237 | 22.42 | 237 | 50.03 | 239 | 45.37 |
| Male | 120 | 28.17 | 120 | 22.60 | 120 | 50.77 | 122 | 43.59 |
| Female | 117 | 27.02 | 117 | 22.25 | 117 | 49.27 | 117 | 47.22 |
| 1979-80 | | | | | | | | |
| Total | 272 | 27.63 | 272 | 22.64 | 272 | 48.28 | 267 | 46.77 |
| Male | 121 | 27.59 | 121 | 23.08 | 121 | 50.68 | 121 | 45.63 |
| Female | 151 | 25.85 | 151 | 22.30 | 151 | 48.16 | 146 | 47.72 |
| 1980-81 | | | | | | | | |
| Total | 225 | 29.46 | 227 | 23.04 | 225 | 52.46 | 226 | 48.08 |
| Male | 101 | 30.09 | 102 | 22.96 | 101 | 53.08 | 102 | 47.08 |
| Female | 124 | 28.95 | 125 | 23.11 | 124 | 51.95 | 124 | 48.89 |

Table 3.5. (Continued):

| | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|---------|----------|-----------|---------------------|-----------|------------------|-----------|-------------------------|-----------|---------------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| 1977-78 | | | | | | | | | | |
| Total | 232 | 27.64 | 227 | 21.29 | 229 | 20.85 | 229 | 18.03 | 222 | 60.45 |
| Male | 107 | 25.74 | 104 | 21.13 | 103 | 20.50 | 105 | 18.35 | 101 | 60.30 |
| Female | 125 | 29.28 | 123 | 21.43 | 126 | 21.15 | 124 | 17.77 | 121 | 60.57 |
| 1978-79 | | | | | | | | | | |
| Total | 239 | 29.25 | 236 | 22.53 | 235 | 21.97 | 236 | 17.89 | 235 | 62.53 |
| Male | 121 | 28.16 | 117 | 22.57 | 116 | 22.11 | 117 | 18.28 | 116 | 63.16 |
| Female | 118 | 30.37 | 119 | 22.50 | 119 | 21.82 | 119 | 17.49 | 119 | 61.91 |
| 1979-80 | | | | | | | | | | |
| Total | 267 | 29.74 | 266 | 24.38 | 265 | 22.38 | 267 | 18.46 | 264 | 65.43 |
| Male | 118 | 28.71 | 116 | 24.38 | 116 | 22.45 | 118 | 19.08 | 116 | 66.02 |
| Female | 149 | 30.55 | 150 | 24.38 | 149 | 22.32 | 149 | 17.96 | 148 | 64.97 |
| 1980-81 | | | | | | | | | | |
| Total | 223 | 30.57 | 223 | 25.71 | 223 | 23.22 | 223 | 19.36 | 223 | 68.38 |
| Male | 101 | 29.99 | 101 | 26.32 | 101 | 23.76 | 101 | 19.95 | 101 | 70.12 |
| Female | 122 | 31.04 | 122 | 25.20 | 122 | 22.78 | 122 | 18.88 | 122 | 66.94 |

Table 3.6. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 8 Groups with Mental Ability Scores: Steuben Middle School

| Source: | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|---------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 955 | 963 |
| Mean Square | 50423.46 | 422.312 | 352.59 | 8.91 | 40.41 | 94.92 |
| F | 1247.81 | 10.45 | 8.73 | .22 | | |
| P | <.001 | <.001 | .003 | .882 | | |
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 956 | 964 |
| Mean Square | 42162.95 | 16.79 | 72.27 | 19.81 | 38.29 | 38.29 |
| F | 1101.25 | .44 | 1.89 | .52 | | |
| P | <.001 | .725 | .170 | .670 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 954 | 962 |
| Mean Square | 185205.24 | 549.84 | 767.04 | 22.78 | 122.35 | 318.87 |
| F | 1513.78 | 4.49 | 6.27 | .19 | | |
| P | <.001 | .004 | .012 | .906 | | |
| <u>Language</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 951 | 959 |
| Mean Square | 128872.87 | 554.30 | 2594.61 | 183.68 | 107.85 | 245.06 |
| F | 1194.92 | 5.14 | 24.06 | 1.70 | | |
| P | <.001 | .002 | <.001 | .165 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 952 | 960 |
| Mean Square | 11206.74 | 365.09 | 1108.46 | 61.47 | 36.69 | 50.36 |
| F | 305.48 | 9.52 | 30.22 | 1.68 | | |
| P | <.001 | <.001 | <.001 | .171 | | |

Table 3.6. (Continued):

| Source | Covariates | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------------|------------|---------|--------|--------|----------|--------|
| <u>Math Computation</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 943 | 951 |
| Mean Square | 21812.55 | 887.53 | 11.69 | 21.45 | 28.01 | 53.07 |
| F | 778.69 | 31.68 | .42 | .77 | | |
| P | <.001 | <.001 | .518 | .513 | | |
| <u>Math Concepts</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 943 | 951 |
| Mean Square | 25091.83 | 232.78 | 8.48 | 25.27 | 27.40 | 54.27 |
| F | 915.92 | 8.50 | .31 | .92 | | |
| P | <.001 | <.001 | .578 | .429 | | |
| <u>Math Problem Solving</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 946 | 954 |
| Mean Square | 21382.62 | 104.93 | 187.47 | 3.74 | 23.42 | 46.08 |
| F | 912.97 | 4.48 | 8.00 | .16 | | |
| P | <.001 | .004 | .005 | .923 | | |
| <u>Math Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 935 | 943 |
| Mean Square | 201651.02 | 2779.88 | 395.21 | 111.90 | 117.06 | 396.40 |
| F | 1138.88 | 15.70 | 2.23 | .63 | | |
| P | <.001 | <.001 | .136 | .594 | | |

Table 3.7. Mean Educational Achievement for Four Successive Grade 7 Groups without Mental Ability Scores:
Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | Spelling | | |
|---------------|----------------|-----------|-------|---------|-----------|------|---------------|-----------|-------|----------|-----------|-------|----------|-----------|------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 99 | 20.34 | 8.97 | 97 | 16.81 | 8.29 | 97 | 37.33 | 16.23 | 90 | 34.90 | 14.63 | 88 | 25.31 | 7.25 |
| Male | 53 | 19.83 | 8.93 | 51 | 16.04 | 7.82 | 51 | 36.18 | 15.45 | 44 | 31.93 | 12.92 | 47 | 22.94 | 5.67 |
| Female | 46 | 20.93 | 9.07 | 46 | 17.67 | 8.79 | 46 | 38.61 | 17.13 | 46 | 37.74 | 15.71 | 41 | 28.02 | 7.95 |
| 1978-79 Total | 53 | 21.87 | 8.68 | 54 | 17.15 | 7.60 | 53 | 39.25 | 15.41 | 53 | 40.43 | 15.57 | 52 | 25.65 | 7.74 |
| Male | 29 | 22.24 | 8.16 | 30 | 17.43 | 7.74 | 29 | 40.10 | 15.17 | 29 | 39.66 | 14.65 | 29 | 24.59 | 6.97 |
| Female | 24 | 21.42 | 9.42 | 24 | 16.79 | 7.56 | 24 | 38.21 | 15.96 | 24 | 41.38 | 16.89 | 23 | 27.00 | 8.58 |
| 1979-80 Total | 60 | 21.15 | 10.52 | 59 | 18.71 | 8.55 | 59 | 40.05 | 18.21 | 59 | 39.54 | 15.72 | 59 | 26.14 | 7.78 |
| Male | 38 | 21.05 | 10.15 | 37 | 17.86 | 7.84 | 37 | 39.22 | 16.97 | 37 | 37.78 | 12.47 | 36 | 24.69 | 6.12 |
| Female | 22 | 21.32 | 11.37 | 22 | 20.14 | 9.65 | 22 | 41.45 | 20.48 | 22 | 42.50 | 20.05 | 23 | 28.39 | 9.56 |
| 1980-81 Total | 67 | 22.27 | 8.56 | 67 | 18.72 | 7.07 | 67 | 40.99 | 14.83 | 67 | 41.73 | 15.00 | 64 | 27.58 | 6.15 |
| Male | 37 | 23.62 | 8.65 | 37 | 18.84 | 7.51 | 37 | 42.46 | 15.31 | 37 | 40.92 | 15.78 | 35 | 26.89 | 6.29 |
| Female | 30 | 20.60 | 8.29 | 30 | 18.57 | 6.60 | 30 | 39.17 | 14.24 | 30 | 42.73 | 15.17 | 29 | 28.41 | 5.98 |

| | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
|---------------|------------------|-----------|------|---------------|-----------|------|----------------------|-----------|------|------------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 86 | 17.10 | 6.57 | 86 | 16.21 | 6.37 | 85 | 14.16 | 5.65 | 84 | 47.81 | 17.19 |
| Male | 45 | 16.27 | 6.37 | 46 | 14.91 | 6.33 | 45 | 13.73 | 4.86 | 44 | 45.50 | 15.90 |
| Female | 41 | 18.02 | 6.75 | 40 | 17.70 | 6.17 | 40 | 14.65 | 6.46 | 40 | 50.35 | 18.37 |
| 1978-79 Total | 55 | 18.55 | 6.64 | 55 | 18.00 | 6.32 | 55 | 14.42 | 5.40 | 55 | 50.96 | 16.60 |
| Male | 31 | 18.90 | 6.31 | 31 | 18.45 | 6.07 | 31 | 15.55 | 4.90 | 31 | 52.90 | 15.46 |
| Female | 24 | 18.08 | 7.16 | 24 | 17.42 | 6.72 | 24 | 12.96 | 5.76 | 24 | 48.46 | 17.99 |
| 1979-80 Total | 60 | 20.67 | 6.23 | 60 | 19.35 | 7.15 | 60 | 15.30 | 6.13 | 60 | 55.32 | 17.60 |
| Male | 37 | 20.70 | 6.59 | 37 | 18.86 | 7.07 | 37 | 15.59 | 6.16 | 37 | 55.16 | 17.77 |
| Female | 23 | 20.61 | 5.74 | 23 | 20.13 | 7.38 | 23 | 14.83 | 6.21 | 23 | 55.57 | 17.70 |
| 1980-81 Total | 64 | 22.36 | 6.30 | 64 | 18.69 | 6.80 | 64 | 15.52 | 5.40 | 64 | 56.56 | 16.81 |
| Male | 35 | 22.40 | 6.36 | 35 | 18.26 | 7.37 | 35 | 16.00 | 5.91 | 35 | 56.66 | 18.36 |
| Female | 29 | 22.31 | 6.34 | 29 | 19.21 | 6.12 | 29 | 14.93 | 4.75 | 29 | 56.45 | 15.05 |

Table 3.8. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 7 Groups without Mental Ability Scores: Steuben Middle School

| Source | Year(Y) | Sex(S) | Y, X, S | Residual | Total |
|-----------------------|---------|--------|---------|----------|--------|
| <u>Word Knowledge</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 271 | 278 |
| Mean Square | 57.00 | 13.17 | 59.35 | 84.75 | 83.92 |
| F | .67 | .16 | .70 | | |
| P | .570 | .694 | .553 | | |
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 269 | 276 |
| Mean Square | 77.46 | 49.26 | 31.09 | 63.39 | 63.10 |
| F | 1.22 | .78 | .49 | | |
| P | .30 | .379 | .689 | | |
| <u>Reading Total</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 268 | 275 |
| Mean Square | 198.92 | 1.56 | 145.81 | 264.66 | 261.69 |
| F | .75 | .01 | .55 | | |
| P | .522 | .939 | .648 | | |
| <u>Language</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 261 | 268 |
| Mean Square | 767.49 | 934.44 | 74.75 | 228.66 | 234.91 |
| F | 3.36 | 4.09 | .33 | | |
| P | .019 | .044 | .806 | | |
| <u>Spelling</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 255 | 262 |
| Mean Square | 70.99 | 738.82 | 43.89 | 49.62 | 52.40 |
| F | 1.43 | 14.89 | .89 | | |
| P | .234 | <.001 | .450 | | |

Table 3.8. (Continued):

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------------|---------|--------|--------|----------|-------------------|
| <u>Math Computation</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 257 | 264 |
| Mean Square | 384.57 | 8.76 | 22.29 | 41.91 | 45.43 |
| F | 9.18 | .21 | .53 | | |
| P | <.001 | .648 | .661 | | |
| <u>Math Concepts</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 257 | 264 |
| Mean Square | 143.59 | 95.19 | 40.83 | 44.05 | 45.26 |
| F | 3.26 | 2.16 | .93 | | |
| P | .022 | .143 | .428 | | |
| <u>Math Problem Solving</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 256 | 263 |
| Mean Square | 28.85 | 29.20 | 35.28 | 31.96 | 31.96 |
| F | .90 | .91 | 1.10 | | |
| P | .440 | .340 | .348 | | |
| <u>Math Total</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 255 | 262 |
| Mean Square | 882.67 | 29.86 | 244.42 | 292.97 | 301.42 |
| F | 3.01 | .10 | .83 | | |
| P | .019 | .750 | .476 | | |

Table 3.9. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 7 Groups without Mental Ability Scores: Steuben Middle School

| | Year (Y) | Sex (S) | Y X S | 1977-78 vs 1978-79 | 1977-78 vs 1979-80 | 1977-78 vs 1980-81 | 1978-79 vs 1979-80 | 1978-79 vs 1980-81 | 1979-80 vs 1980-81 |
|----------------------|-------------|--------------------|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Word Knowledge | NS | NS | NS | | | | | | |
| Reading | NS | NS | NS | | | | | | |
| Reading Total | NS | NS | NS | | | | | | |
| Language | .019 | .044 ¹ | NS | NS | NS | Sign ² | NS | NS | NS |
| Spelling | NS | <.001 ¹ | NS | | | | | | |
| Math Computation | <.001 | NS | NS | NS | Sign ² | Sign ² | NS | Sign ² | NS |
| Math Concepts | .022 | NS | NS | NS | Sign ² | NS | NS | NS | NS |
| Math Problem Solving | NS | NS | NS | | | | | | |
| Math Total | .008 | NS | NS | NS | NS | Sign ² | NS | NS | NS |

¹ The mean achievement of the females was significantly higher than the mean of the males.

² The mean achievement of the group of the later year was significantly higher than the mean of the group of the prior year.

Table 3.10. Mean Educational Achievement for Four Successive Grade 8 Groups without Mental Ability Scores:
Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | Spelling | | |
|---------------|----------------|-----------|-------|---------|-----------|-------|---------------|-----------|-------|----------|-----------|-------|----------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 71 | 24.00 | 10.19 | 70 | 20.43 | 9.48 | 70 | 44.59 | 19.05 | 68 | 40.66 | 16.02 | 68 | 27.01 | 9.42 |
| Male | 41 | 24.61 | 10.21 | 40 | 20.85 | 10.07 | 40 | 45.75 | 19.49 | 39 | 37.95 | 15.28 | 38 | 26.79 | 10.21 |
| Female | 30 | 23.17 | 10.28 | 30 | 19.87 | 8.76 | 30 | 43.03 | 18.65 | 29 | 44.31 | 16.51 | 30 | 27.30 | 8.48 |
| 1978-79 Total | 50 | 24.68 | 8.87 | 52 | 20.62 | 8.93 | 50 | 45.26 | 17.39 | 52 | 41.48 | 16.56 | 51 | 28.53 | 7.36 |
| Male | 25 | 23.28 | 8.05 | 26 | 20.15 | 9.28 | 25 | 42.96 | 16.89 | 26 | 35.50 | 13.78 | 26 | 26.50 | 6.94 |
| Female | 25 | 26.08 | 9.59 | 26 | 21.08 | 8.72 | 25 | 47.56 | 17.92 | 26 | 47.46 | 17.18 | 25 | 30.64 | 7.31 |
| 1979-80 Total | 81 | 26.58 | 10.60 | 81 | 21.95 | 9.61 | 81 | 48.53 | 19.73 | 80 | 44.03 | 16.83 | 73 | 28.48 | 8.23 |
| Male | 50 | 27.30 | 10.73 | 50 | 22.32 | 9.89 | 50 | 49.62 | 20.08 | 49 | 44.80 | 16.27 | 44 | 27.14 | 8.59 |
| Female | 31 | 25.42 | 10.47 | 31 | 21.35 | 9.26 | 31 | 46.77 | 19.34 | 31 | 42.81 | 17.89 | 29 | 30.52 | 7.33 |
| 1980-81 Total | 99 | 25.74 | 10.32 | 101 | 20.34 | 8.90 | 99 | 46.13 | 18.00 | 100 | 41.07 | 15.41 | 96 | 29.36 | 8.04 |
| Male | 53 | 26.36 | 10.68 | 55 | 19.91 | 9.06 | 53 | 46.36 | 18.50 | 54 | 39.61 | 14.79 | 53 | 27.51 | 8.11 |
| Female | 46 | 25.02 | 9.96 | 46 | 20.85 | 8.78 | 46 | 45.87 | 17.61 | 46 | 42.78 | 16.09 | 43 | 31.65 | 7.41 |

| | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
|---------------|------------------|-----------|------|---------------|-----------|------|----------------------|-----------|------|------------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 69 | 19.04 | 7.91 | 68 | 18.53 | 7.58 | 69 | 15.20 | 6.81 | 67 | 53.39 | 20.28 |
| Male | 38 | 18.89 | 8.21 | 37 | 17.89 | 7.26 | 37 | 15.41 | 7.14 | 37 | 52.54 | 20.38 |
| Female | 31 | 19.23 | 7.65 | 31 | 19.29 | 8.00 | 32 | 14.97 | 6.51 | 30 | 54.43 | 20.45 |
| 1978-79 Total | 51 | 21.51 | 7.51 | 51 | 19.75 | 6.82 | 51 | 16.76 | 6.76 | 51 | 58.02 | 19.44 |
| Male | 25 | 19.88 | 7.43 | 25 | 18.60 | 6.56 | 25 | 16.44 | 6.45 | 25 | 54.92 | 18.79 |
| Female | 26 | 23.08 | 7.38 | 26 | 20.85 | 7.01 | 26 | 17.08 | 7.16 | 26 | 61.00 | 19.96 |
| 1979-80 Total | 74 | 23.49 | 7.49 | 73 | 21.37 | 7.66 | 72 | 17.39 | 7.23 | 72 | 62.42 | 21.15 |
| Male | 44 | 24.59 | 7.02 | 43 | 22.44 | 7.74 | 42 | 18.64 | 7.85 | 42 | 66.05 | 21.36 |
| Female | 30 | 21.87 | 7.99 | 30 | 19.83 | 7.41 | 30 | 15.63 | 5.96 | 30 | 57.33 | 20.10 |
| 1980-81 Total | 98 | 22.16 | 7.21 | 97 | 19.95 | 6.64 | 98 | 16.58 | 5.79 | 97 | 58.85 | 18.03 |
| Male | 54 | 22.39 | 7.74 | 54 | 19.78 | 7.28 | 54 | 16.22 | 6.32 | 54 | 58.39 | 19.99 |
| Female | 44 | 21.89 | 6.57 | 43 | 20.16 | 5.82 | 44 | 17.02 | 5.09 | 43 | 59.42 | 15.43 |

Table 3.11. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 8 Groups without Mental Ability Scores: Steuben Middle School

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|---------|---------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 293 | 300 |
| Mean Square | 93.65 | 47.16 | 66.20 | 103.48 | 102.85 |
| F | .91 | .46 | .64 | | |
| P | .439 | .500 | .59 | | |
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 296 | 303 |
| Mean Square | 46.49 | <.001 | 22.52 | 86.14 | 84.84 |
| F | .54 | <.001 | .26 | | |
| P | .655 | .998 | .853 | | |
| <u>Reading Total</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 292 | 299 |
| Mean Square | 214.96 | 42.07 | 169.94 | 349.95 | 345.82 |
| F | .61 | .12 | .49 | | |
| P | .606 | .729 | .693 | | |
| <u>Language</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 292 | 299 |
| Mean Square | 212.16 | 1244.13 | 538.00 | 254.08 | 259.50 |
| F | .84 | 4.90 | 2.12 | | |
| P | .476 | .028 | .098 | | |
| <u>Spelling</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 280 | 287 |
| Mean Square | 73.00 | 676.50 | 51.11 | 67.26 | 69.28 |
| F | 1.09 | 10.06 | .76 | | |
| P | .356 | .002 | .517 | | |

Table 3.11. (Continued):

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------------|---------|--------|--------|----------|--------|
| <u>Math Computation</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 284 | 291 |
| Mean Square | 247.36 | 2.88 | 89.25 | 56.12 | 58.26 |
| F | 4.41 | .05 | 1.59 | | |
| P | .005 | .821 | .192 | | |
| <u>Math Concepts</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 281 | 288 |
| Mean Square | 96.12 | 3.30 | 72.59 | 51.31 | 51.82 |
| F | 1.87 | .06 | 1.42 | | |
| P | .134 | .800 | .239 | | |
| <u>Math Problem Solving</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 282 | 289 |
| Mean Square | 58.27 | 14.86 | 55.87 | 43.32 | 43.52 |
| F | 1.35 | .34 | 1.29 | | |
| P | .260 | .558 | .278 | | |
| <u>Math Total</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 279 | 286 |
| Mean Square | 954.14 | 5.10 | 626.57 | 383.90 | 391.12 |
| F | 2.49 | .01 | 1.63 | | |
| P | .061 | .908 | .182 | | |

Table 3.12. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 8 Groups without Mental Ability Scores: Steuben Middle School

| | Year | Sex | | 1977-78 | 1977-78 | 1977-78 | 1978-79 | 1978-79 | 1979-80 |
|----------------------|------|-------------------|-------|---------|---------|-------------------|---------|---------|---------|
| | (Y) | (S) | Y X S | vs | vs | vs | vs | vs | vs |
| | | | | 1978-79 | 1979-80 | 1980-81 | 1979-80 | 1980-81 | 1980-81 |
| Word Knowledge | NS | NS | NS | | | | | | |
| Reading | NS | NS | NS | | | | | | |
| Reading Total | NS | NS | NS | | | | | | |
| Language | NS | .028 ¹ | NS | | | | | | |
| Spelling | NS | .002 ¹ | NS | | | | | | |
| Math Computation | .005 | NS | NS | NS | NS | Sign ² | NS | NS | NS |
| Math Concepts | NS | NS | NS | | | | | | |
| Math Problem Solving | NS | NS | NS | | | | | | |
| Math Total | NS | NS | NS | | | | | | |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean achievement of the group of the later year was significantly higher than the mean of the group of the prior year.

Table 3.13. Mean Educational Achievement for Four Successive Grade 7 Groups with and without Mental Ability Scores: Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | Spelling | | |
|---------------|----------------|-----------|------|---------|-----------|------|---------------|-----------|-------|----------|-----------|-------|----------|-----------|------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 326 | 23.12 | 9.74 | 323 | 19.13 | 8.81 | 323 | 42.37 | 17.68 | 314 | 37.94 | 15.68 | 310 | 26.14 | 7.06 |
| Male | 170 | 23.25 | 9.80 | 167 | 18.98 | 8.83 | 167 | 42.47 | 17.67 | 161 | 35.97 | 15.42 | 161 | 25.24 | 7.28 |
| Female | 156 | 22.98 | 9.71 | 156 | 19.29 | 8.82 | 156 | 42.27 | 17.74 | 153 | 40.01 | 15.73 | 149 | 27.11 | 6.70 |
| 1978-79 Total | 377 | 21.35 | 8.87 | 381 | 16.97 | 7.92 | 377 | 38.37 | 16.02 | 378 | 39.79 | 15.65 | 374 | 26.67 | 7.31 |
| Male | 171 | 22.17 | 9.25 | 175 | 17.58 | 8.53 | 171 | 39.89 | 17.12 | 173 | 38.96 | 15.38 | 173 | 26.23 | 7.24 |
| Female | 206 | 20.67 | 8.49 | 206 | 16.44 | 7.35 | 206 | 37.11 | 14.97 | 205 | 40.49 | 15.88 | 201 | 27.04 | 7.36 |
| 1979-80 Total | 351 | 22.63 | 9.16 | 349 | 18.23 | 8.49 | 349 | 41.54 | 16.85 | 350 | 41.03 | 15.25 | 347 | 26.47 | 7.30 |
| Male | 177 | 22.36 | 8.93 | 175 | 18.02 | 8.18 | 175 | 40.54 | 16.23 | 176 | 38.99 | 13.67 | 172 | 24.88 | 6.73 |
| Female | 174 | 22.90 | 9.42 | 174 | 19.63 | 8.74 | 174 | 42.53 | 17.45 | 174 | 43.10 | 16.49 | 175 | 28.03 | 7.52 |
| 1980-81 Total | 374 | 24.00 | 8.45 | 374 | 20.17 | 7.95 | 374 | 44.17 | 15.52 | 373 | 45.93 | 15.31 | 367 | 28.08 | 6.83 |
| Male | 180 | 23.87 | 8.06 | 180 | 19.62 | 7.36 | 180 | 43.49 | 14.46 | 180 | 43.12 | 14.30 | 176 | 27.00 | 6.64 |
| Female | 194 | 24.12 | 8.82 | 194 | 20.68 | 8.45 | 194 | 44.80 | 16.46 | 193 | 48.55 | 15.77 | 191 | 29.08 | 6.86 |

| | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
|---------------|------------------|-----------|------|---------------|-----------|------|----------------------|-----------|------|------------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 309 | 18.07 | 6.58 | 308 | 17.45 | 6.70 | 304 | 15.06 | 6.24 | 303 | 50.84 | 18.02 |
| Male | 159 | 17.70 | 6.60 | 160 | 17.07 | 7.32 | 156 | 15.22 | 6.45 | 155 | 50.43 | 18.76 |
| Female | 150 | 18.46 | 6.56 | 148 | 17.87 | 5.95 | 148 | 14.89 | 6.03 | 148 | 51.26 | 17.27 |
| 1978-79 Total | 377 | 19.89 | 6.72 | 375 | 18.13 | 7.06 | 378 | 14.83 | 6.14 | 375 | 52.93 | 18.22 |
| Male | 174 | 19.66 | 6.97 | 173 | 18.87 | 6.99 | 175 | 15.67 | 6.29 | 173 | 54.30 | 18.44 |
| Female | 203 | 20.08 | 6.51 | 202 | 17.49 | 7.07 | 203 | 14.10 | 5.92 | 202 | 51.75 | 18.00 |
| 1979-80 Total | 350 | 22.46 | 6.35 | 349 | 20.31 | 6.65 | 349 | 15.78 | 5.98 | 348 | 58.57 | 17.02 |
| Male | 175 | 22.25 | 6.44 | 174 | 20.06 | 6.76 | 174 | 15.73 | 5.94 | 173 | 58.10 | 17.16 |
| Female | 175 | 22.67 | 6.27 | 175 | 20.55 | 6.55 | 175 | 15.82 | 6.03 | 175 | 59.05 | 16.92 |
| 1980-81 Total | 369 | 23.70 | 6.49 | 367 | 20.39 | 6.45 | 367 | 16.72 | 5.68 | 366 | 60.89 | 16.74 |
| Male | 177 | 22.75 | 6.22 | 176 | 19.57 | 6.47 | 175 | 16.24 | 5.59 | 175 | 58.54 | 16.38 |
| Female | 192 | 24.58 | 6.62 | 191 | 21.14 | 6.35 | 192 | 17.17 | 5.71 | 191 | 63.04 | 16.81 |

Table 3.14. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 7 Groups with and without Mental Ability Scores: Steuben Middle School

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|-----------------------|---------|---------|----------|--------|--------|--------|-----------|----------|--------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1412 | 1427 |
| Mean Square | 96.17 | 46.93 | 725.85 | 32.01 | 178.86 | 4.43 | 93.59 | 81.04 | 82.57 |
| F | 1.19 | .58 | 8.96 | .40 | 2.21 | .06 | 1.16 | | |
| P | .31 | .45 | .003 | .757 | .085 | .815 | .326 | | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1411 | 1426 |
| Mean Square | 220.03 | 57.78 | 289.45 | 61.36 | 154.36 | 10.36 | 30.50 | 68.07 | 69.80 |
| F | 3.23 | .85 | 4.25 | .90 | 2.27 | .15 | .45 | | |
| P | .022 | .357 | .039 | .440 | .079 | .697 | .719 | | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1407 | 1422 |
| Mean Square | 533.26 | 3.09 | 1817.31 | 160.91 | 636.21 | .01 | 218.99 | 269.74 | 276.00 |
| F | 1.98 | .01 | 6.74 | .60 | 2.36 | <.001 | .81 | | |
| P | .116 | .915 | .010 | .617 | .070 | .995 | .487 | | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1399 | 1414 |
| Mean Square | 2049.91 | 2691.71 | 1142.59 | 89.60 | 380.43 | 2.08 | 108.13 | 235.17 | 247.55 |
| F | 8.72 | 11.45 | 4.86 | .38 | 1.62 | .01 | .46 | | |
| P | <.001 | .001 | .028 | .767 | .183 | .925 | .710 | | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1382 | 1397 |
| Mean Square | 153.03 | 1145.74 | 71.46 | 37.10 | 13.49 | 131.13 | 69.89 | 49.74 | 51.27 |
| F | 3.08 | 23.04 | 1.44 | .75 | .27 | 2.64 | 1.41 | | |
| P | .027 | <.001 | .231 | .525 | .846 | .105 | .240 | | |

Table 3.14. (Continued):

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|-----------------------------|---------|--------|----------|--------|-------|-------|-----------|----------|--------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1389 | 1404 |
| Mean Square | 1270.66 | 54.23 | 561.88 | 19.73 | 6.91 | 21.74 | 34.75 | 42.37 | 47.32 |
| F | 29.99 | 1.28 | 13.26 | .47 | .16 | .51 | .82 | | |
| P | <.001 | .258 | <.001 | .706 | .921 | .474 | .483 | | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1383 | 1398 |
| Mean Square | 405.75 | 59.75 | 306.38 | 73.77 | 26.64 | 41.91 | 29.56 | 44.81 | 46.74 |
| F | 9.06 | 1.33 | 6.84 | 1.65 | .59 | .94 | .66 | | |
| P | <.001 | .248 | .009 | .177 | .619 | .334 | .577 | | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1382 | 1397 |
| Mean Square | 109.86 | 59.89 | 210.95 | 48.10 | 7.65 | 23.22 | 43.57 | 35.82 | 36.50 |
| F | 3.07 | 1.67 | 5.89 | 1.34 | .21 | .65 | 1.22 | | |
| P | .027 | .196 | .015 | .259 | .887 | .421 | .302 | | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1376 | 1391 |
| Mean Square | 4002.06 | 34.19 | 3153.80 | 354.28 | 45.45 | 13.73 | 304.23 | 303.89 | 321.86 |
| F | 13.17 | .11 | 10.38 | 1.17 | .15 | .05 | 1.00 | | |
| P | <.001 | .737 | .001 | .322 | .930 | .832 | .391 | | |

Table 3.15. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 7 Groups with and without Mental Ability Scores: Steuben Middle School

| | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| Word Knowledge | NS | NS | .003 ² | NS | NS | NS | NS |
| Reading | .022 | NS | .039 ² | NS | NS | NS | NS |
| Reading Total | NS | NS | .010 ² | NS | NS | NS | NS |
| Language | <.001 | .001 ¹ | .028 ² | NS | NS | NS | NS |
| Spelling | .027 | <.001 ¹ | NS | NS | NS | NS | NS |
| Math Computation | <.001 | NS | <.001 ² | NS | NS | NS | NS |
| Math Concepts | <.001 | NS | .009 ² | NS | NS | NS | NS |
| Math Problem Solving | .027 | NS | .015 ² | NS | NS | NS | NS |
| Math Total | <.001 | NS | .001 ² | NS | NS | NS | NS |
| | 1977-78 vs 1978-79 | 1977-78 vs 1979-80 | 1977-78 vs 1980-81 | 1978-79 vs 1979-80 | 1978-79 vs 1980-81 | 1979-80 vs 1980-81 | |
| Reading | Sign ³ | NS | NS | Sign ⁴ | Sign ⁴ | Sign ⁴ | |
| Language | NS | NS | Sign ⁴ | NS | Sign ⁴ | Sign ⁴ | |
| Spelling | NS | NS | Sign ⁴ | NS | NS | Sign ⁴ | |
| Math Computation | Sign ⁴ | Sign ⁴ | Sign ⁴ | Sign ⁴ | Sign ⁴ | NS | |
| Math Concepts | NS | Sign ⁴ | Sign ⁴ | Sign ⁴ | Sign ⁴ | NS | |
| Math Problem Solving | NS | NS | Sign ⁴ | NS | Sign ⁴ | NS | |
| Math Total | NS | Sign ⁴ | Sign ⁴ | Sign ⁴ | Sign ⁴ | NS | |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean achievement of the group with mental ability scores was significantly higher than the mean of the group without mental ability scores.

³The mean achievement of the group of the prior year was significantly higher than the mean of the group of the later year.

⁴The mean achievement of the group of the later year was significantly higher than the mean of the group of the prior year.

Table J.16. Mean Educational Achievement for Four Successive Grade 8 Groups with and without Mental Ability Scores: Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | Spelling | | |
|---------------|----------------|-----------|-------|---------|-----------|-------|---------------|-----------|-------|----------|-----------|-------|----------|-----------|------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 301 | 26.08 | 9.65 | 299 | 22.11 | 9.47 | 299 | 48.22 | 18.27 | 296 | 43.91 | 15.22 | 300 | 27.51 | 8.02 |
| Male | 145 | 27.01 | 10.40 | 143 | 23.13 | 10.14 | 143 | 50.21 | 19.73 | 142 | 41.55 | 16.60 | 145 | 26.19 | 8.37 |
| Female | 156 | 25.22 | 8.84 | 156 | 21.19 | 8.75 | 156 | 46.40 | 16.69 | 154 | 46.08 | 14.59 | 155 | 28.75 | 7.49 |
| 1978-79 Total | 287 | 27.79 | 9.60 | 289 | 22.74 | 9.07 | 287 | 50.54 | 17.93 | 291 | 45.73 | 16.31 | 290 | 29.43 | 6.70 |
| Male | 145 | 27.88 | 9.77 | 146 | 22.66 | 9.27 | 145 | 50.48 | 18.24 | 148 | 42.91 | 16.37 | 147 | 28.07 | 6.76 |
| Female | 142 | 27.71 | 9.45 | 143 | 22.82 | 8.89 | 142 | 50.61 | 17.68 | 143 | 48.64 | 15.78 | 143 | 30.84 | 6.35 |
| 1979-80 Total | 353 | 26.01 | 9.91 | 353 | 21.94 | 9.20 | 353 | 47.95 | 18.34 | 347 | 45.33 | 16.58 | 340 | 29.23 | 7.32 |
| Male | 171 | 26.88 | 10.21 | 171 | 22.29 | 9.52 | 171 | 49.16 | 18.90 | 170 | 44.40 | 16.48 | 162 | 28.03 | 7.91 |
| Female | 182 | 25.19 | 9.58 | 182 | 21.61 | 8.91 | 182 | 46.80 | 17.79 | 177 | 46.23 | 16.68 | 178 | 30.31 | 6.58 |
| 1980-81 Total | 324 | 28.23 | 10.14 | 328 | 22.11 | 8.83 | 324 | 50.35 | 17.76 | 326 | 45.69 | 15.26 | 319 | 30.17 | 7.28 |
| Male | 154 | 28.65 | 10.17 | 157 | 21.79 | 9.11 | 154 | 50.47 | 18.10 | 156 | 44.33 | 14.68 | 154 | 29.09 | 7.05 |
| Female | 170 | 27.85 | 10.13 | 171 | 22.41 | 8.57 | 170 | 50.24 | 17.49 | 170 | 46.94 | 15.71 | 165 | 31.18 | 7.38 |

| | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
|---------------|------------------|-----------|------|---------------|-----------|------|----------------------|-----------|------|------------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| 1977-78 Total | 296 | 20.81 | 7.68 | 297 | 20.34 | 7.67 | 298 | 17.40 | 7.07 | 289 | 59.04 | 20.82 |
| Male | 142 | 20.76 | 8.26 | 140 | 20.14 | 8.22 | 142 | 17.82 | 7.60 | 138 | 59.07 | 22.51 |
| Female | 154 | 20.86 | 7.14 | 157 | 20.53 | 7.16 | 156 | 17.03 | 6.54 | 151 | 59.01 | 19.23 |
| 1978-79 Total | 287 | 22.78 | 7.15 | 286 | 22.04 | 7.49 | 287 | 18.12 | 6.74 | 286 | 62.98 | 20.11 |
| Male | 142 | 22.32 | 7.39 | 141 | 21.74 | 7.88 | 142 | 18.19 | 6.67 | 141 | 62.35 | 20.71 |
| Female | 145 | 23.23 | 6.90 | 145 | 22.32 | 7.11 | 145 | 18.04 | 6.84 | 145 | 63.59 | 19.57 |
| 1979-80 Total | 340 | 23.84 | 7.37 | 338 | 21.79 | 7.43 | 339 | 17.89 | 7.03 | 336 | 63.72 | 20.36 |
| Male | 160 | 24.04 | 7.36 | 159 | 22.02 | 7.76 | 160 | 18.55 | 7.54 | 158 | 64.73 | 21.42 |
| Female | 180 | 23.66 | 7.40 | 179 | 21.59 | 7.14 | 179 | 17.31 | 6.50 | 178 | 62.82 | 19.38 |
| 1980-81 Total | 321 | 24.57 | 6.91 | 320 | 22.18 | 6.84 | 321 | 18.46 | 6.29 | 320 | 65.27 | 18.40 |
| Male | 155 | 24.88 | 7.19 | 155 | 22.30 | 7.25 | 155 | 18.59 | 6.61 | 155 | 65.77 | 19.50 |
| Female | 166 | 24.28 | 6.65 | 165 | 22.05 | 6.45 | 166 | 18.35 | 6.00 | 165 | 64.80 | 17.35 |

Table 3.17. Tests of Significance (ANOVA) of Differences In Educational Achievement for Four Successive Grade 8 Groups with and without Mental Ability Scores: Steuben Middle School

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|-----------------------|---------|---------|----------|--------|--------|--------|-----------|----------|--------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1249 | 1264 |
| Mean Square | 199.17 | 103.55 | 1333.19 | 78.96 | 228.33 | 45.30 | 40.37 | 95.54 | 97.55 |
| F | 2.09 | 1.92 | 13.95 | .83 | 2.39 | .47 | .42 | | |
| P | .100 | .166 | <.001 | .479 | .067 | .491 | .737 | | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1253 | 1268 |
| Mean Square | 7.12 | 31.16 | 791.03 | 66.45 | 82.00 | 27.70 | 8.71 | 83.21 | 83.47 |
| F | .09 | .37 | 9.51 | .80 | .99 | .33 | .11 | | |
| P | .968 | .54 | .002 | .495 | .399 | .564 | .957 | | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1247 | 1262 |
| Mean Square | 196.66 | 327.70 | 4055.80 | 283.87 | 570.93 | 163.59 | 84.78 | 324.06 | 327.71 |
| F | .61 | 1.01 | 12.52 | .88 | 1.76 | .51 | .26 | | |
| P | .611 | .315 | <.001 | .453 | .153 | .478 | .853 | | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1244 | 1259 |
| Mean Square | 134.10 | 3416.15 | 3903.30 | 570.44 | 250.44 | 171.22 | 325.82 | 245.68 | 251.79 |
| F | .55 | 13.91 | 15.89 | 2.32 | 1.02 | .70 | 1.33 | | |
| P | .651 | <.001 | <.001 | .074 | .383 | .404 | .264 | | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1233 | 1248 |
| Mean Square | 294.82 | 1414.23 | 113.76 | 17.71 | 4.18 | 42.14 | 82.15 | 52.69 | 54.81 |
| F | 5.60 | 26.84 | 2.16 | .34 | .08 | .80 | 1.56 | | |
| P | .001 | <.001 | .142 | .799 | .971 | .371 | .198 | | |

Table 3.17. (Continued):

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|-----------------------------|---------|--------|----------|--------|--------|-------|-----------|----------|--------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1228 | 1243 |
| Mean Square | 631.58 | .37 | 869.93 | 86.53 | 88.25 | 2.91 | 69.60 | 52.25 | 54.86 |
| F | 9.96 | .01 | 16.65 | 1.66 | 1.69 | .06 | 1.33 | | |
| P | <.001 | .933 | <.001 | .175 | .168 | .813 | .262 | | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1225 | 1240 |
| Mean Square | 160.71 | 1.52 | 1085.89 | 59.94 | 65.90 | 15.35 | 63.51 | 53.34 | 54.50 |
| F | 3.01 | .03 | 20.36 | 1.12 | 1.24 | .29 | 1.19 | | |
| P | .029 | .866 | <.001 | .345 | .295 | .592 | .312 | | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1229 | 1244 |
| Mean Square | 72.89 | 93.68 | 895.15 | 46.65 | 48.03 | 5.66 | 42.42 | 45.37 | 46.12 |
| F | 1.61 | 2.07 | 19.73 | 1.03 | 1.06 | .13 | .94 | | |
| P | .186 | .151 | <.001 | .379 | .366 | .724 | .423 | | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 1215 | 1230 |
| Mean Square | 1816.56 | 56.92 | 8237.88 | 492.07 | 496.93 | 73.72 | 560.96 | 390.38 | 401.10 |
| F | 4.65 | .15 | 21.10 | 1.26 | 1.27 | .19 | 1.44 | | |
| P | .003 | .703 | <.001 | .287 | .282 | .664 | .230 | | |

Table 3.18. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 8 Groups with and without Mental Ability Scores: Steuben Middle School

| | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G |
|----------------------|---------|--------------------|--------------------|-------|-------|-------|-----------|
| Word Knowledge | .100 | NS | <.001 ² | NS | .067 | NS | NS |
| Reading | NS | NS | .002 ² | NS | NS | NS | NS |
| Reading Total | NS | NS | <.001 ² | NS | NS | NS | NS |
| Language | NS | <.001 ¹ | <.001 ² | .074 | NS | NS | NS |
| Spelling | .001 | <.001 ¹ | NS | NS | NS | NS | NS |
| Math Computation | <.001 | NS | <.001 ² | NS | NS | NS | NS |
| Math Concepts | .029 | NS | <.001 ² | NS | NS | NS | NS |
| Math Problem Solving | NS | NS | <.001 ² | NS | NS | NS | NS |
| Math Total | .003 | NS | <.001 ² | NS | NS | NS | NS |

| | 1977-78 vs 1978-79 | 1977-78 vs 1979-80 | 1977-78 vs 1980-81 | 1978-79 vs 1979-80 | 1978-79 vs 1979-80 | 1979-80 vs 1980-81 |
|------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Spelling | Sign ³ | Sign ³ | Sign ³ | NS | NS | NS |
| Math Computation | Sign ³ | Sign ³ | Sign ³ | NS | Sign ³ | NS |
| Math Concepts | Sign ³ | NS | Sign ³ | NS | NS | NS |
| Math Total | NS | Sign ³ | Sign ³ | NS | NS | NS |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean achievement of the group with mental ability scores was significantly higher than the mean of the group without mental ability scores.

³The mean achievement of the group of the later year was significantly higher than the mean of the group of the prior year.

Table 3.19. Mean Educational Achievement for 1978-79 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and for 1978-79 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | | | |
|------------------------|----------------|-------|-------|------------------|-------|------|---------------|-------|-------|----------------------|-------|-------|------------|-------|-------|
| | N | X | SD | N | X | SD | N | X | SD | N | X | SD | | | |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 29 | 24.28 | 8.27 | 29 | 20.34 | 8.92 | 29 | 44.62 | 16.83 | 29 | 43.07 | 16.15 | | | |
| Male | 14 | 22.71 | 7.23 | 14 | 19.29 | 9.60 | 14 | 42.00 | 16.65 | 14 | 36.86 | 13.13 | | | |
| Female | 15 | 25.73 | 9.14 | 15 | 21.33 | 8.45 | 15 | 47.07 | 17.20 | 15 | 48.87 | 16.95 | | | |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 21 | 25.24 | 9.83 | 23 | 20.96 | 9.13 | 21 | 46.14 | 18.52 | 23 | 39.48 | 17.20 | | | |
| Male | 11 | 24.00 | 9.31 | 12 | 21.17 | 9.20 | 11 | 44.18 | 17.93 | 12 | 33.92 | 14.92 | | | |
| Female | 10 | 26.60 | 10.71 | 11 | 20.73 | 9.49 | 10 | 48.30 | 19.88 | 11 | 45.55 | 18.12 | | | |
| | | | | | | | | | | | | | | | |
| | Spelling | | | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
| | N | X | SD | N | X | SD | N | X | SD | N | X | SD | N | X | SD |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 29 | 29.00 | 7.87 | 29 | 22.41 | 7.59 | 29 | 20.72 | 6.72 | 29 | 18.59 | 6.81 | 29 | 61.72 | 19.71 |
| Male | 14 | 27.07 | 7.60 | 14 | 21.14 | 7.90 | 14 | 19.57 | 7.05 | 14 | 18.21 | 7.44 | 14 | 58.93 | 20.75 |
| Female | 15 | 30.80 | 7.94 | 15 | 23.60 | 7.35 | 15 | 21.80 | 6.45 | 15 | 18.93 | 6.40 | 15 | 64.33 | 19.03 |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 22 | 27.91 | 6.75 | 22 | 20.32 | 7.40 | 22 | 18.45 | 6.90 | 22 | 14.36 | 6.03 | 22 | 53.14 | 18.38 |
| Male | 12 | 25.83 | 6.35 | 11 | 18.27 | 6.81 | 11 | 17.36 | 5.99 | 11 | 14.18 | 4.21 | 11 | 49.82 | 15.37 |
| Female | 10 | 30.40 | 6.67 | 11 | 22.36 | 7.71 | 11 | 19.55 | 7.84 | 11 | 14.55 | 7.65 | 11 | 56.45 | 21.19 |

Table 3.20. Tests of Significance (ANOVA) of Differences in Educational Achievement between 1978-79 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and 1978-79 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------|----------|---------|-------|----------|--------|
| <u>Word Knowledge</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 46 | 49 |
| Mean Square | 14.16 | 100.88 | .53 | 81.44 | 78.75 |
| F | .17 | 1.24 | .01 | | |
| P | .679 | .272 | .936 | | |
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 48 | 51 |
| Mean Square | 5.39 | 11.67 | 19.80 | 83.96 | 79.73 |
| F | .06 | .14 | .24 | | |
| P | .801 | .711 | .629 | | |
| <u>Reading Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 46 | 49 |
| Mean Square | 35.72 | 272.00 | 2.73 | 315.67 | 302.52 |
| F | .11 | .86 | .01 | | |
| P | .738 | .358 | .926 | | |
| <u>Language</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 48 | 51 |
| Mean Square | 125.41 | 1820.05 | .46 | 249.90 | 274.14 |
| F | .50 | 7.28 | <.01 | | |
| P | .48 | .010 | .966 | | |
| <u>Spelling</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 47 | 50 |
| Mean Square | 8.68 | 212.24 | 2.19 | 52.71 | 54.13 |
| F | .17 | 4.03 | .04 | | |
| P | .687 | .051 | .840 | | |

Table 3.20. (Continued):

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------------|----------|--------|-------|----------|--------|
| <u>Math Computation</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 47 | 50 |
| Mean Square | 52.10 | 127.42 | 8.34 | 55.87 | 56.34 |
| F | .93 | 2.28 | .15 | | |
| P | .339 | .138 | .701 | | |
| <u>Math Concepts</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 47 | 50 |
| Mean Square | 62.28 | 62.14 | .007 | 46.83 | 46.55 |
| F | 1.33 | 1.33 | <.001 | | |
| P | .255 | .255 | .99 | | |
| <u>Math Problem Solving</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 47 | 50 |
| Mean Square | 221.96 | 4.08 | .40 | 43.74 | 45.66 |
| F | 5.08 | .09 | .01 | | |
| P | .029 | .761 | .925 | | |
| <u>Math Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 47 | 50 |
| Mean Square | 900.47 | 449.02 | 4.74 | 372.78 | 377.94 |
| F | 2.42 | 1.21 | .01 | | |
| P | .127 | .278 | .91 | | |

Table 3.21. Mean Educational Achievement for 1979-80 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and for 1979-80 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | | | |
|------------------------|----------------|-------|-------|------------------|-------|-------|---------------|-------|-------|----------------------|-------|-------|------------|-------|-------|
| | N | X | SD | N | X | SD | N | X | SD | N | X | SD | | | |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 34 | 27.26 | 7.77 | 34 | 21.79 | 7.78 | 34 | 49.06 | 14.79 | 34 | 44.41 | 15.62 | | | |
| Male | 20 | 28.20 | 7.35 | 20 | 22.05 | 7.61 | 20 | 50.25 | 14.06 | 20 | 43.70 | 13.01 | | | |
| Female | 14 | 25.93 | 8.42 | 14 | 21.43 | 8.29 | 14 | 47.36 | 16.15 | 14 | 45.43 | 19.23 | | | |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 47 | 26.09 | 12.31 | 47 | 22.06 | 10.82 | 47 | 48.15 | 22.79 | 46 | 43.74 | 17.84 | | | |
| Male | 30 | 26.70 | 12.57 | 30 | 22.50 | 11.28 | 30 | 49.20 | 23.47 | 29 | 45.55 | 18.36 | | | |
| Female | 17 | 25.00 | 12.15 | 17 | 21.29 | 10.25 | 17 | 46.29 | 22.12 | 17 | 40.65 | 16.99 | | | |
| | | | | | | | | | | | | | | | |
| | Spelling | | | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
| | N | X | SD | N | X | SD | N | X | SD | N | X | SD | N | X | SD |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 31 | 28.23 | 6.74 | 31 | 23.58 | 5.98 | 31 | 21.90 | 7.18 | 31 | 17.94 | 6.04 | 31 | 63.42 | 17.60 |
| Male | 18 | 27.06 | 6.36 | 18 | 23.83 | 4.82 | 18 | 21.44 | 7.76 | 18 | 18.94 | 6.13 | 18 | 64.22 | 17.31 |
| Female | 13 | 29.85 | 7.16 | 13 | 23.23 | 7.51 | 13 | 22.54 | 6.55 | 13 | 16.54 | 5.85 | 13 | 62.31 | 18.78 |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 42 | 28.67 | 9.25 | 43 | 23.42 | 8.49 | 42 | 20.98 | 8.06 | 41 | 16.98 | 8.07 | 41 | 61.66 | 23.64 |
| Male | 26 | 27.19 | 9.96 | 26 | 25.12 | 8.26 | 25 | 23.16 | 7.81 | 24 | 18.42 | 9.06 | 24 | 67.42 | 24.24 |
| Female | 16 | 31.06 | 7.65 | 17 | 20.82 | 8.41 | 17 | 17.76 | 7.53 | 17 | 14.94 | 6.12 | 17 | 53.53 | 20.78 |

Table 3.22. Tests of Significance (ANOVA) of Differences in Educational Achievement between 1979-80 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and 1979-80 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------|----------|--------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 77 | 80 |
| Mean Square | 32.09 | 72.32 | 1.53 | 115.49 | 112.42 |
| F | .28 | .63 | .01 | | |
| P | .600 | .431 | .909 | | |
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 77 | 80 |
| Mean Square | .97 | 17.36 | 1.60 | 95.60 | 92.27 |
| F | .01 | .18 | .02 | | |
| P | .920 | .671 | .897 | | |
| <u>Reading Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 77 | 80 |
| Mean Square | 21.91 | 160.55 | <.01 | 401.94 | 389.08 |
| F | .05 | .40 | <.001 | | |
| P | .816 | .529 | .999 | | |
| <u>Language</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 76 | 79 |
| Mean Square | 11.21 | 77.52 | 204.90 | 290.61 | 283.27 |
| F | .04 | .27 | .71 | | |
| P | .845 | .607 | .404 | | |
| <u>Spelling</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 69 | 72 |
| Mean Square | 5.82 | 202.15 | 4.99 | 67.56 | 67.67 |
| F | .09 | 2.99 | .07 | | |
| P | .770 | .088 | .787 | | |

Table 3.22. (Continued):

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------------|----------|---------|--------|----------|--------|
| <u>Math Computation</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 70 | 73 |
| Mean Square | .93 | 132.84 | 59.24 | 55.80 | 56.14 |
| F | .02 | 2.38 | 1.06 | | |
| P | .898 | .127 | .306 | | |
| <u>Math Concepts</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 69 | 72 |
| Mean Square | 16.62 | 121.53 | 182.06 | 56.64 | 58.71 |
| F | .29 | 2.15 | 3.21 | | |
| P | .590 | .148 | .077 | | |
| <u>Math Problem Solving</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 68 | 71 |
| Mean Square | 16.75 | 158.99 | 4.91 | 51.99 | 52.35 |
| F | .32 | 3.06 | .09 | | |
| P | .572 | .085 | .760 | | |
| <u>Math Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 68 | 71 |
| Mean Square | 57.32 | 1331.52 | 615.30 | 437.50 | 447.25 |
| F | .13 | 3.04 | 1.41 | | |
| P | .719 | .086 | .240 | | |

Table 3.23. Mean Educational Achievement for 1980-81 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and for 1980-81 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| | Word Knowledge | | | Reading | | | Reading Total | | | Language | | | | | |
|------------------------|----------------|-----------|-------|------------------|-----------|------|---------------|-----------|-------|----------------------|-----------|-------|------------|-----------|-------|
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | | | |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 32 | 26.16 | 9.41 | 32 | 22.16 | 8.42 | 32 | 48.31 | 16.76 | 33 | 42.67 | 15.59 | | | |
| Male | 19 | 27.79 | 10.12 | 19 | 23.16 | 8.85 | 19 | 50.95 | 18.02 | 19 | 41.89 | 16.56 | | | |
| Female | 13 | 23.77 | 8.03 | 13 | 20.69 | 7.86 | 13 | 44.46 | 14.54 | 14 | 43.71 | 14.71 | | | |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 67 | 25.54 | 10.80 | 69 | 19.49 | 9.05 | 67 | 45.09 | 18.60 | 67 | 40.28 | 15.37 | | | |
| Male | 34 | 25.56 | 11.05 | 36 | 18.19 | 8.81 | 34 | 43.79 | 18.52 | 35 | 38.37 | 13.84 | | | |
| Female | 33 | 25.52 | 10.70 | 33 | 20.91 | 9.23 | 33 | 46.42 | 18.86 | 32 | 42.38 | 16.87 | | | |
| | Spelling | | | Math Computation | | | Math Concepts | | | Math Problem Solving | | | Math Total | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 32 | 28.31 | 7.39 | 32 | 22.44 | 7.61 | 31 | 21.52 | 7.38 | 32 | 16.59 | 5.82 | 31 | 61.03 | 19.04 |
| Male | 18 | 26.33 | 6.97 | 18 | 24.00 | 6.90 | 18 | 22.44 | 8.24 | 18 | 17.17 | 7.21 | 18 | 63.61 | 21.50 |
| Female | 14 | 30.86 | 7.38 | 14 | 20.43 | 8.25 | 13 | 20.23 | 6.06 | 14 | 15.86 | 3.44 | 13 | 57.46 | 15.07 |
| Not Present in Grade 7 | | | | | | | | | | | | | | | |
| Total | 64 | 29.89 | 8.34 | 66 | 22.03 | 7.06 | 66 | 19.21 | 6.19 | 66 | 16.58 | 5.82 | 66 | 57.82 | 17.59 |
| Male | 35 | 28.11 | 8.67 | 36 | 21.58 | 8.10 | 36 | 18.44 | 6.47 | 36 | 15.75 | 5.89 | 36 | 55.78 | 18.96 |
| Female | 29 | 32.03 | 7.53 | 30 | 22.57 | 5.65 | 30 | 20.13 | 5.82 | 30 | 17.57 | 5.67 | 30 | 60.27 | 15.76 |

Table 3.24. Tests of Significance (ANOVA) of Differences in Educational Achievement between 1980-81 Grade 8 Students without Mental Ability Scores Who Were Present in Grade 7 and 1980-81 Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------|----------|--------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 95 | 98 |
| Mean Square | 5.53 | 41.24 | 83.55 | 108.55 | 106.56 |
| F | .05 | .38 | .77 | | |
| P | .822 | .539 | .383 | | |
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 97 | 100 |
| Mean Square | 163.80 | 50.79 | 143.02 | 78.27 | 79.21 |
| F | 2.09 | .39 | 1.83 | | |
| P | .151 | .532 | .180 | | |
| <u>Reading Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 95 | 98 |
| Mean Square | 220.55 | 1.48 | 439.06 | 327.27 | 323.99 |
| F | .67 | <.01 | 1.34 | | |
| P | .414 | .947 | .250 | | |
| <u>Language</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 96 | 99 |
| Mean Square | 144.40 | 268.69 | 25.94 | 240.44 | 237.40 |
| F | .60 | 1.12 | .11 | | |
| P | .440 | .293 | .743 | | |
| <u>Spelling</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 92 | 95 |
| Mean Square | 48.87 | 402.97 | 1.92 | 61.70 | 64.57 |
| F | .79 | 6.53 | .03 | | |
| P | .376 | .012 | .860 | | |

Table 3.24. (Continued):

| Source | Group(G) | Sex(S) | G X S | Residual | Total |
|-----------------------------|----------|--------|--------|----------|--------|
| <u>Math Computation</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 94 | 97 |
| Mean Square | 3.43 | 5.98 | 110.29 | 52.34 | 51.95 |
| F | .07 | .11 | 2.11 | | |
| P | .799 | .736 | .150 | | |
| <u>Math Concepts</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 93 | 96 |
| Mean Square | 113.42 | 4.99 | 78.67 | 43.45 | 44.13 |
| F | 2.61 | .12 | 1.81 | | |
| P | .110 | .735 | .182 | | |
| <u>Math Problem Solving</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 94 | 97 |
| Mean Square | .022 | 15.55 | 51.96 | 33.83 | 33.48 |
| F | <.01 | .46 | 1.54 | | |
| P | .980 | .499 | .218 | | |
| <u>Math Total</u> | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 93 | 96 |
| Mean Square | 223.08 | 30.57 | 584.62 | 326.56 | 325.03 |
| F | .68 | .09 | 1.79 | | |
| P | .411 | .760 | .184 | | |

Table 3.25. Summary of Differences in Educational Achievement for Three Successive Grade 8 Groups of Students without Mental Ability Scores Who Were Present in Grade 7 and Grade 8 Students Who Were Not Present in Grade 7: Steuben Middle School

| | Grade 8 in 1978-79 | | | Grade 8 in 1979-80 | | | Grade 8 in 1980-81 | | |
|----------------------|-----------------------|-------------------|-------|-----------------------|-----|-------|-----------------------|-------------------|-------|
| | Group | Sex | G X S | Group | Sex | G X S | Group | Sex | G X S |
| Word Knowledge | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| Reading | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| Reading Total | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| Language | NS | .010 ² | NS | NS | NS | NS | NS | NS | NS |
| Spelling | NS | .051 ² | NS | NS | NS | NS | NS | .012 ² | NS |
| Math Computation | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| Math Concepts | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| Math Problem Solving | .029 ¹ | NS | NS | NS | NS | NS | NS | NS | NS |
| Math Total | NS | NS | NS | NS | NS | NS | NS | NS | NS |

¹ The mean achievement of the group present in Grade 7 was significantly higher than the mean of the group not present in Grade 7.

² ERIC achievement of the females was significantly higher than the mean of the males.

Table 1.26. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 1: Steuben Middle School

| 1977-1978 Grade 1 | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | |
|----------------------|----------------|-----------|-------|----------------|-------|-----------|------|---------------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 191 | 44.24 | 15.37 | 25.34 | 9.84 | 21.32 | 8.58 | 46.66 | 17.64 | 40.64 | 15.98 |
| Male | 97 | 44.86 | 15.76 | 26.39 | 9.34 | 21.87 | 8.37 | 48.26 | 16.91 | 39.80 | 15.67 |
| Female | 94 | 43.61 | 15.01 | 24.26 | 10.27 | 20.76 | 8.80 | 45.01 | 18.31 | 41.50 | 16.32 |
| 1st Quarter | | | | | | | | | | | |
| Total | 48 | 24.56 | 5.16 | 17.00 | 6.97 | 14.29 | 6.45 | 31.29 | 12.55 | 26.56 | 10.38 |
| Male | 25 | 25.16 | 5.28 | 19.04 | 6.64 | 15.00 | 6.49 | 34.04 | 12.11 | 27.12 | 10.09 |
| Female | 23 | 23.91 | 5.05 | 14.78 | 6.76 | 13.52 | 6.46 | 28.30 | 12.66 | 25.96 | 10.89 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 48 | 38.13 | 3.38 | 20.58 | 7.19 | 17.44 | 6.09 | 38.02 | 12.00 | 33.29 | 8.91 |
| Male | 22 | 37.64 | 3.08 | 20.64 | 5.53 | 17.68 | 5.33 | 38.32 | 9.45 | 31.00 | 7.38 |
| Female | 26 | 38.54 | 3.62 | 20.54 | 8.45 | 17.23 | 6.76 | 37.77 | 13.69 | 35.23 | 9.75 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 47 | 50.45 | 3.72 | 28.17 | 6.26 | 23.34 | 6.47 | 51.51 | 11.18 | 44.25 | 11.23 |
| Male | 22 | 50.09 | 3.54 | 28.55 | 5.34 | 23.23 | 6.19 | 51.77 | 9.64 | 41.46 | 12.08 |
| Female | 25 | 50.76 | 3.91 | 27.84 | 7.07 | 23.44 | 6.83 | 51.28 | 12.57 | 45.50 | 10.97 |
| 4th Quarter | | | | | | | | | | | |
| Total | 48 | 63.96 | 5.82 | 35.67 | 6.47 | 30.25 | 5.14 | 65.92 | 10.71 | 58.63 | 10.99 |
| Male | 28 | 64.00 | 6.10 | 35.79 | 7.25 | 30.21 | 5.20 | 66.66 | 11.51 | 56.79 | 10.67 |
| Female | 20 | 63.90 | 5.56 | 35.50 | 5.38 | 30.30 | 5.07 | 65.30 | 9.77 | 61.20 | 11.18 |

Table 3.26. (Continued):

| 1977-1978 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|-------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 7 | | | | | | | | | | |
| Total | 26.85 | 6.98 | 18.91 | 6.66 | 18.64 | 6.73 | 15.75 | 6.51 | 53.30 | 18.44 |
| Male | 26.74 | 7.61 | 18.80 | 6.79 | 18.82 | 7.57 | 16.38 | 6.95 | 54.01 | 19.79 |
| Female | 26.96 | 6.31 | 19.02 | 6.56 | 18.45 | 5.78 | 15.11 | 5.99 | 52.57 | 17.01 |
| 1st Quarter | | | | | | | | | | |
| Total | 23.02 | 6.31 | 13.48 | 4.27 | 13.19 | 3.91 | 10.77 | 3.83 | 37.44 | 9.66 |
| Male | 22.88 | 7.21 | 13.80 | 4.63 | 12.80 | 4.78 | 11.40 | 3.96 | 38.00 | 11.24 |
| Female | 23.17 | 5.32 | 13.13 | 3.92 | 13.61 | 2.71 | 10.49 | 3.65 | 36.83 | 7.79 |
| 2nd Quarter | | | | | | | | | | |
| Total | 24.65 | 6.64 | 16.23 | 4.26 | 15.81 | 4.28 | 12.69 | 4.10 | 44.73 | 10.59 |
| Male | 24.41 | 7.18 | 16.00 | 5.11 | 15.41 | 4.79 | 12.41 | 3.94 | 43.82 | 11.62 |
| Female | 24.85 | 6.28 | 16.42 | 3.49 | 16.15 | 4.06 | 12.92 | 4.30 | 45.50 | 9.80 |
| 3rd Quarter | | | | | | | | | | |
| Total | 27.66 | 6.01 | 20.04 | 5.44 | 19.19 | 5.22 | 15.98 | 4.81 | 55.21 | 13.39 |
| Male | 26.68 | 7.17 | 18.73 | 5.22 | 18.95 | 6.06 | 15.27 | 4.54 | 52.95 | 13.46 |
| Female | 28.52 | 4.75 | 21.20 | 5.46 | 19.40 | 4.46 | 16.60 | 5.04 | 57.20 | 13.27 |
| 4th Quarter | | | | | | | | | | |
| Total | 32.08 | 5.39 | 25.92 | 5.01 | 26.38 | 4.81 | 23.58 | 3.40 | 75.88 | 11.71 |
| Male | 32.07 | 5.64 | 25.54 | 5.18 | 26.79 | 5.43 | 24.82 | 3.34 | 77.14 | 12.47 |
| Female | 32.10 | 5.18 | 26.45 | 4.85 | 25.80 | 3.82 | 21.85 | 3.96 | 74.10 | 10.61 |

Table 3.26. (Continued):

| 1978-1979 Grade 8 | Word Knowledge | | Reading | | Reading Total | | Language | |
|----------------------|----------------|------|-----------|------|---------------|-------|-----------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 29.31 | 9.73 | 24.22 | 9.17 | 53.53 | 18.16 | 48.23 | 16.28 |
| Male | 30.52 | 9.38 | 24.82 | 9.01 | 55.34 | 17.59 | 47.60 | 16.14 |
| Female | 28.06 | 9.97 | 23.60 | 9.33 | 51.66 | 18.63 | 48.88 | 16.47 |
| 1st Quarter | | | | | | | | |
| Total | 19.96 | 7.48 | 15.04 | 6.38 | 35.00 | 12.85 | 32.08 | 9.81 |
| Male | 20.68 | 7.87 | 16.48 | 6.75 | 38.96 | 13.74 | 33.24 | 10.94 |
| Female | 19.22 | 6.14 | 13.48 | 5.69 | 30.70 | 10.46 | 30.83 | 8.47 |
| 2nd Quarter | | | | | | | | |
| Total | 25.52 | 6.72 | 20.75 | 5.65 | 46.27 | 11.31 | 42.19 | 10.50 |
| Male | 25.09 | 6.89 | 20.32 | 5.13 | 45.41 | 10.79 | 39.91 | 9.57 |
| Female | 25.88 | 6.70 | 21.12 | 6.13 | 47.00 | 11.90 | 44.12 | 10.23 |
| 3rd Quarter | | | | | | | | |
| Total | 32.09 | 5.51 | 27.98 | 5.76 | 60.06 | 10.15 | 52.15 | 10.60 |
| Male | 33.41 | 4.25 | 29.05 | 5.88 | 62.45 | 9.38 | 51.00 | 10.47 |
| Female | 30.92 | 6.28 | 27.04 | 5.59 | 57.96 | 10.52 | 55.04 | 10.56 |
| 4th Quarter | | | | | | | | |
| Total | 39.73 | 5.40 | 33.19 | 6.33 | 72.92 | 10.39 | 65.60 | 11.30 |
| Male | 39.68 | 5.49 | 32.50 | 6.65 | 72.18 | 10.46 | 63.79 | 11.97 |
| Female | 39.80 | 5.41 | 34.15 | 5.88 | 73.95 | 10.48 | 68.15 | 10.02 |

Table 3.26. (Continued):

| 1978-1979 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|-------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 8 | | | | | | | | | | |
| Total | 29.94 | 6.46 | 23.51 | 7.19 | 23.07 | 7.67 | 18.82 | 6.86 | 65.41 | 20.52 |
| Male | 29.08 | 6.73 | 23.88 | 7.35 | 23.65 | 7.86 | 19.44 | 6.68 | 66.97 | 20.70 |
| Female | 30.83 | 6.07 | 23.14 | 7.03 | 22.48 | 7.46 | 18.18 | 7.01 | 63.80 | 20.33 |
| 1st Quarter | | | | | | | | | | |
| Total | 26.13 | 6.01 | 17.48 | 4.64 | 16.31 | 4.54 | 13.00 | 4.54 | 46.79 | 12.17 |
| Male | 25.24 | 6.77 | 18.32 | 5.59 | 16.80 | 4.89 | 14.24 | 4.70 | 49.36 | 13.70 |
| Female | 27.09 | 5.04 | 16.57 | 3.19 | 15.78 | 4.17 | 11.65 | 4.04 | 44.00 | 9.81 |
| 2nd Quarter | | | | | | | | | | |
| Total | 27.60 | 5.56 | 21.00 | 4.63 | 20.00 | 4.89 | 16.42 | 4.57 | 57.42 | 12.24 |
| Male | 26.09 | 5.71 | 20.91 | 4.65 | 20.55 | 4.39 | 16.86 | 4.68 | 58.32 | 12.36 |
| Female | 28.88 | 5.19 | 21.08 | 4.71 | 19.54 | 5.32 | 16.04 | 4.54 | 56.65 | 12.33 |
| 3rd Quarter | | | | | | | | | | |
| Total | 31.30 | 5.23 | 24.34 | 6.05 | 24.53 | 6.61 | 19.68 | 5.48 | 68.55 | 15.95 |
| Male | 29.86 | 4.74 | 23.82 | 6.07 | 23.82 | 7.25 | 18.91 | 5.04 | 66.55 | 15.67 |
| Female | 32.56 | 5.41 | 24.80 | 6.12 | 25.16 | 6.08 | 20.36 | 5.86 | 70.32 | 16.31 |
| 4th Quarter | | | | | | | | | | |
| Total | 34.77 | 5.34 | 31.25 | 4.95 | 31.48 | 4.44 | 26.21 | 4.70 | 88.94 | 12.70 |
| Male | 34.25 | 5.33 | 31.21 | 5.34 | 32.07 | 4.17 | 26.54 | 4.42 | 89.82 | 12.51 |
| Female | 35.50 | 5.38 | 31.30 | 4.66 | 30.65 | 4.78 | 25.75 | 5.16 | 87.70 | 13.17 |

Table 3.27. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 1: Strickland Middle School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|--------|--------|---------|-------|--------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 219.20 | 6736.41 | 177.67 | 73.53 | 1494.55 | 3.28 | 15.52 | 9.04 | 10.45 |
| F | 2.98 | 91.62 | 1.74 | | 143.03 | .31 | 1.48 | .86 | |
| P | .086 | <.001 | .161 | | <.001 | .576 | .220 | .460 | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 25.94 | 5350.28 | 43.52 | 62.44 | 816.37 | 1.27 | 64.77 | 21.65 | 11.12 |
| F | .42 | 85.69 | .70 | | 73.40 | .11 | 5.82 | 1.95 | |
| P | .520 | <.001 | .555 | | <.001 | .735 | .001 | .124 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 395.94 | 24085.38 | 312.26 | 233.68 | 4520.09 | 8.64 | 121.98 | 57.76 | 25.22 |
| F | 1.69 | 103.07 | 1.34 | | 179.22 | .34 | 4.84 | 2.29 | |
| P | .195 | <.001 | .264 | | <.001 | .559 | .003 | .080 | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 769.68 | 19417.21 | 228.91 | 180.33 | 5460.05 | 8.76 | 67.87 | 2.60 | 34.23 |
| F | 4.27 | 108.01 | 1.27 | | 159.51 | .26 | 1.98 | .08 | |
| P | .040 | <.001 | .286 | | <.001 | .614 | .118 | .973 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 184.75 | 1471.03 | 11.60 | 56.39 | 907.85 | 52.98 | 3.25 | 2.42 | 11.62 |
| F | 3.28 | 26.09 | .21 | | 78.10 | 4.56 | .28 | .21 | |
| P | .072 | <.001 | .892 | | <.001 | .034 | .840 | .891 | |

Table 3.27. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------------|--------|------------|--------|--------|----------|-------|-------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 10.15 | 3011.43 | 34.45 | 40.68 | 1993.16 | 19.78 | 7.29 | 1.58 | 8.35 |
| F | .25 | 74.03 | .85 | | 238.70 | 2.37 | .87 | .19 | |
| P | .618 | <.001 | .470 | | <.001 | .125 | .456 | .90 | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 1.76 | 3472.88 | 17.14 | 36.89 | 1856.38 | 14.35 | 23.86 | 9.77 | 11.47 |
| F | .05 | 94.14 | .46 | | 161.87 | 1.25 | 2.08 | .85 | |
| P | .827 | <.001 | .707 | | <.001 | .265 | .104 | .467 | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 39.80 | 2916.87 | 59.62 | 33.55 | 921.97 | .14 | 13.60 | 16.06 | 7.77 |
| F | 1.19 | 86.93 | 1.78 | | 118.72 | .02 | 1.75 | 2.07 | |
| P | .278 | <.001 | .153 | | <.001 | .894 | .158 | .106 | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 1 | 1 | 3 | 3 | 183 |
| Mean Square | 19.79 | 28146.19 | 255.57 | 272.10 | 13946.30 | 74.06 | 88.96 | 33.96 | 37.54 |
| F | .07 | 103.44 | .94 | | 371.47 | 1.97 | 2.37 | .90 | |
| P | .788 | <.001 | .423 | | <.001 | .162 | .072 | .44 | |

Table 3.28. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 2: Steuben Middle School

| 1978-1979 | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | |
|-------------|----------------|-----------|-------|----------------|------|-----------|------|---------------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 7 | | | | | | | | | | | |
| Total | 247 | 41.04 | 15.12 | 21.72 | 8.83 | 17.64 | 7.91 | 39.36 | 15.93 | 41.35 | 15.63 |
| Male | 106 | 40.65 | 16.76 | 22.19 | 9.29 | 18.00 | 8.48 | 40.19 | 16.97 | 40.12 | 15.83 |
| Female | 141 | 41.34 | 13.81 | 21.37 | 8.49 | 17.37 | 7.47 | 38.74 | 15.14 | 42.28 | 15.46 |
| 1st Quarter | | | | | | | | | | | |
| Total | 66 | 21.85 | 7.16 | 14.60 | 4.47 | 11.29 | 4.52 | 25.89 | 7.96 | 27.31 | 8.38 |
| Male | 30 | 20.53 | 7.62 | 14.60 | 5.03 | 11.37 | 5.46 | 25.97 | 9.43 | 26.67 | 8.14 |
| Female | 32 | 23.09 | 6.57 | 14.59 | 3.97 | 11.22 | 3.52 | 25.81 | 6.43 | 27.91 | 8.68 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 62 | 35.60 | 3.11 | 18.10 | 5.33 | 15.02 | 4.89 | 33.11 | 8.77 | 36.03 | 11.45 |
| Male | 24 | 35.38 | 3.37 | 18.92 | 5.27 | 15.29 | 5.39 | 34.21 | 8.76 | 35.54 | 11.17 |
| Female | 38 | 35.74 | 2.97 | 17.58 | 5.38 | 14.84 | 4.62 | 32.42 | 8.82 | 36.34 | 11.76 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 61 | 46.44 | 3.15 | 22.97 | 6.48 | 18.43 | 6.65 | 41.39 | 12.02 | 44.98 | 11.14 |
| Male | 23 | 46.26 | 2.85 | 22.17 | 7.00 | 18.52 | 7.20 | 40.70 | 13.25 | 41.78 | 10.61 |
| Female | 38 | 46.55 | 3.36 | 23.45 | 6.19 | 18.37 | 6.39 | 41.82 | 11.37 | 46.92 | 11.13 |
| 4th Quarter | | | | | | | | | | | |
| Total | 62 | 60.37 | 6.17 | 31.24 | 8.15 | 25.84 | 6.88 | 57.08 | 13.94 | 57.15 | 12.87 |
| Male | 29 | 61.38 | 7.02 | 32.76 | 7.06 | 26.69 | 6.50 | 59.45 | 12.47 | 56.52 | 13.72 |
| Female | 33 | 59.48 | 5.26 | 29.91 | 8.88 | 25.09 | 7.21 | 55.00 | 14.99 | 57.70 | 12.26 |

Table 3.28. (Continued):

| 1978-1979 Grade 7 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|----------------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 27.43 | 7.24 | 21.12 | 6.51 | 18.90 | 7.09 | 15.49 | 6.18 | 55.51 | 18.20 |
| Male | 26.69 | 7.26 | 20.85 | 6.80 | 19.65 | 7.09 | 16.18 | 6.33 | 56.68 | 18.65 |
| Female | 27.99 | 7.20 | 21.32 | 6.30 | 18.33 | 7.07 | 14.98 | 6.03 | 54.63 | 17.88 |
| 1st Quarter | | | | | | | | | | |
| Total | 22.42 | 6.26 | 15.98 | 4.13 | 13.44 | 4.88 | 10.69 | 3.41 | 40.11 | 9.69 |
| Male | 22.47 | 6.11 | 15.17 | 4.08 | 14.43 | 5.37 | 11.63 | 3.63 | 41.23 | 10.79 |
| Female | 22.38 | 6.50 | 16.75 | 4.10 | 12.50 | 4.26 | 9.81 | 2.98 | 39.06 | 8.57 |
| 2nd Quarter | | | | | | | | | | |
| Total | 26.52 | 6.08 | 19.42 | 4.93 | 16.11 | 4.33 | 13.48 | 4.16 | 49.02 | 10.73 |
| Male | 26.17 | 6.37 | 19.25 | 4.53 | 18.08 | 3.90 | 13.92 | 3.89 | 51.25 | 9.52 |
| Female | 26.74 | 5.97 | 19.53 | 5.23 | 14.87 | 4.16 | 13.21 | 4.35 | 47.61 | 11.32 |
| 3rd Quarter | | | | | | | | | | |
| Total | 28.11 | 6.01 | 21.98 | 5.09 | 19.89 | 5.05 | 15.98 | 4.94 | 57.85 | 13.14 |
| Male | 26.52 | 6.84 | 22.30 | 5.41 | 19.48 | 4.80 | 16.65 | 5.06 | 58.43 | 13.07 |
| Female | 29.08 | 5.32 | 21.79 | 4.95 | 20.13 | 5.24 | 15.58 | 4.90 | 57.50 | 13.34 |
| 4th Quarter | | | | | | | | | | |
| Total | 32.69 | 6.68 | 27.10 | 6.10 | 26.18 | 6.49 | 21.82 | 5.70 | 75.10 | 16.68 |
| Male | 31.62 | 6.66 | 26.90 | 6.32 | 26.48 | 6.96 | 22.38 | 6.13 | 75.76 | 17.72 |
| Female | 33.64 | 6.66 | 27.27 | 5.99 | 25.91 | 6.15 | 21.33 | 5.34 | 74.52 | 15.97 |

Table 3.28. (Continued):

| 1979-1980 Grade 8 | Word Knowledge | | Reading | | Reading Total | | Language | |
|----------------------|-------------------|------|-----------|------|------------------|-------|-----------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 26.18 | 9.67 | 22.25 | 9.09 | 48.43 | 17.89 | 46.13 | 16.56 |
| Male | 26.92 | 9.88 | 22.49 | 9.26 | 49.41 | 18.19 | 44.33 | 16.74 |
| Female | 25.63 | 9.51 | 22.07 | 8.98 | 47.70 | 17.69 | 47.49 | 16.35 |
| 1st Quarter | | | | | | | | |
| Total | 17.58 | 5.80 | 14.65 | 5.37 | 32.23 | 9.68 | 32.15 | 11.22 |
| Male | 18.37 | 6.01 | 15.07 | 5.81 | 33.43 | 10.26 | 30.63 | 10.42 |
| Female | 16.84 | 5.59 | 14.25 | 4.99 | 31.09 | 9.11 | 33.56 | 11.92 |
| 2nd Quarter | | | | | | | | |
| Total | 22.82 | 6.82 | 19.10 | 6.23 | 41.92 | 11.92 | 40.63 | 11.36 |
| Male | 23.71 | 7.94 | 19.67 | 6.50 | 43.38 | 13.27 | 41.04 | 11.40 |
| Female | 22.26 | 6.05 | 18.74 | 6.11 | 41.00 | 11.07 | 40.37 | 11.49 |
| 3rd Quarter | | | | | | | | |
| Total | 28.00 | 6.59 | 23.57 | 7.25 | 51.57 | 12.09 | 48.52 | 12.54 |
| Male | 27.78 | 6.68 | 22.87 | 7.72 | 50.65 | 12.35 | 44.04 | 13.66 |
| Female | 28.13 | 6.63 | 24.00 | 7.02 | 52.13 | 12.06 | 51.24 | 11.13 |
| 4th Quarter | | | | | | | | |
| Total | 36.35 | 7.69 | 31.71 | 7.22 | 68.06 | 14.13 | 63.27 | 12.72 |
| Male | 37.72 | 5.73 | 32.21 | 6.43 | 69.93 | 11.17 | 61.45 | 13.10 |
| Female | 35.15 | 8.99 | 31.27 | 7.92 | 66.42 | 16.30 | 64.88 | 12.36 |

Table 3.28. (Continued):

| 1979-1980 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|-------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 8 | | | | | | | | | | |
| Total | 29.66 | 7.09 | 24.32 | 7.26 | 22.30 | 7.22 | 18.29 | 6.98 | 64.90 | 20.00 |
| Male | 28.54 | 7.69 | 24.16 | 7.35 | 22.26 | 7.62 | 18.85 | 7.45 | 65.27 | 21.07 |
| Female | 30.50 | 6.51 | 24.43 | 7.23 | 22.32 | 6.94 | 17.87 | 6.61 | 64.62 | 19.23 |
| 1st Quarter | | | | | | | | | | |
| Total | 24.87 | 5.58 | 17.95 | 5.46 | 16.58 | 5.08 | 13.45 | 4.96 | 47.98 | 12.66 |
| Male | 23.63 | 6.01 | 17.70 | 5.48 | 16.27 | 5.92 | 13.97 | 5.28 | 47.93 | 14.62 |
| Female | 26.03 | 4.95 | 18.19 | 5.52 | 16.88 | 4.23 | 12.97 | 4.67 | 48.03 | 10.76 |
| 2nd Quarter | | | | | | | | | | |
| Total | 28.50 | 5.46 | 22.53 | 5.82 | 19.34 | 4.95 | 15.76 | 5.18 | 57.63 | 13.85 |
| Male | 27.58 | 5.90 | 22.96 | 5.33 | 19.56 | 4.82 | 16.21 | 5.45 | 59.13 | 13.32 |
| Female | 29.08 | 5.15 | 22.26 | 6.17 | 18.95 | 5.05 | 15.47 | 5.05 | 56.68 | 14.27 |
| 3rd Quarter | | | | | | | | | | |
| Total | 30.07 | 6.33 | 25.95 | 4.73 | 24.03 | 5.41 | 19.33 | 4.84 | 69.31 | 13.31 |
| Male | 28.09 | 7.73 | 25.96 | 4.98 | 22.96 | 5.51 | 19.83 | 5.60 | 68.74 | 14.95 |
| Female | 31.26 | 5.05 | 25.95 | 4.65 | 24.68 | 5.32 | 19.03 | 4.38 | 69.66 | 12.40 |
| 4th Quarter | | | | | | | | | | |
| Total | 35.21 | 6.81 | 30.85 | 6.04 | 29.26 | 6.07 | 24.63 | 7.07 | 84.74 | 17.96 |
| Male | 34.76 | 6.45 | 30.41 | 6.28 | 29.83 | 5.96 | 25.31 | 7.39 | 85.55 | 18.22 |
| Female | 35.61 | 7.19 | 31.24 | 5.90 | 28.76 | 6.21 | 24.03 | 6.83 | 84.03 | 17.98 |

Table 3.29. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 2: Steuben Middle School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|--------|--------|---------|-------|--------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 123.16 | 7171.09 | 63.46 | 72.36 | 2424.75 | 9.66 | 31.26 | 4.98 | 12.47 |
| F | 1.70 | 98.41 | .88 | | 194.46 | .77 | 2.51 | .40 | |
| P | .193 | <.001 | .454 | | <.001 | .380 | .060 | .753 | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 28.46 | 5591.64 | 15.74 | 66.28 | 2518.07 | 1.20 | 35.35 | 6.44 | 11.57 |
| F | .43 | 84.36 | .24 | | 217.55 | .10 | 3.05 | .56 | |
| P | .513 | <.001 | .870 | | <.001 | .748 | .029 | .644 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 270.03 | 25328.77 | 141.93 | 237.02 | 9884.75 | 4.06 | 122.77 | 14.32 | 28.40 |
| F | 1.14 | 106.50 | .60 | | 348.01 | .14 | 4.32 | .50 | |
| P | .228 | <.001 | .618 | | <.001 | .706 | .005 | .680 | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 844.21 | 20551.79 | 188.17 | 223.98 | 2679.98 | 38.27 | 38.01 | 22.70 | 40.37 |
| F | 3.77 | 91.76 | .84 | | 66.37 | .95 | .94 | .56 | |
| P | .053 | <.001 | .473 | | <.001 | .331 | .421 | .640 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 314.78 | 2232.62 | 20.83 | 63.07 | 569.18 | 15.37 | 3.76 | 17.38 | 12.49 |
| F | 4.99 | 35.40 | .33 | | 45.58 | 1.23 | .30 | 1.39 | |
| P | .026 | <.001 | .803 | | <.001 | .268 | .824 | .246 | |

Table 3.29. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------------|--------|------------|-------|--------|----------|-------|-------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 10.19 | 3153.70 | 12.08 | 48.25 | 1237.45 | 2.30 | 23.02 | 5.74 | 9.23 |
| F | .21 | 65.35 | .25 | | 134.12 | .25 | 2.50 | .62 | |
| P | .646 | <.001 | .861 | | <.001 | .618 | .061 | .601 | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 43.37 | 3715.49 | 53.60 | 47.12 | 1303.12 | 53.04 | 6.73 | 14.40 | 9.22 |
| F | .92 | 78.84 | 1.14 | | 141.28 | 5.75 | .73 | 1.56 | |
| P | .338 | <.001 | .335 | | <.001 | .017 | .535 | .200 | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 133.91 | 2837.62 | 2.65 | 41.16 | 930.22 | 1.30 | 5.19 | 1.63 | 11.77 |
| F | 3.25 | 68.94 | .06 | | 79.05 | .11 | .44 | .14 | |
| P | .073 | <.001 | .979 | | <.001 | .740 | .724 | .937 | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 239 | 1 | 1 | 3 | 3 | 239 |
| Mean Square | 223.98 | 28936.77 | 46.31 | 341.35 | 10358.29 | 47.70 | 65.70 | 9.56 | 41.17 |
| F | .66 | 84.77 | .14 | | 251.62 | 1.16 | 1.60 | .23 | |
| P | .419 | <.001 | .939 | | <.001 | .283 | .191 | .874 | |

Table 3.30. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 3: Steuben Middle School

| 1979-1980 | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | |
|-------------|----------------|-----------|-------|----------------|------|-----------|------|---------------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 7 | | | | | | | | | | | |
| Total | 216 | 41.63 | 13.84 | 23.69 | 8.82 | 19.45 | 8.60 | 43.14 | 16.70 | 42.75 | 15.15 |
| Male | 96 | 41.63 | 13.85 | 24.52 | 8.45 | 19.70 | 8.70 | 44.22 | 16.43 | 42.22 | 14.05 |
| Female | 120 | 41.64 | 13.89 | 23.03 | 9.08 | 19.25 | 8.55 | 42.28 | 16.94 | 43.17 | 16.02 |
| 1st Quarter | | | | | | | | | | | |
| Total | 54 | 24.04 | 5.88 | 15.43 | 5.50 | 12.09 | 5.46 | 27.52 | 9.51 | 30.48 | 11.91 |
| Male | 26 | 24.85 | 5.60 | 16.85 | 5.13 | 12.08 | 5.35 | 28.92 | 8.96 | 33.71 | 12.03 |
| Female | 28 | 23.29 | 6.13 | 14.11 | 5.60 | 12.11 | 5.65 | 26.21 | 9.97 | 27.86 | 11.40 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 54 | 36.52 | 2.85 | 21.31 | 5.75 | 16.91 | 5.89 | 38.22 | 10.66 | 38.15 | 9.25 |
| Male | 22 | 36.55 | 2.86 | 22.82 | 5.49 | 18.05 | 6.34 | 40.86 | 10.58 | 37.23 | 7.28 |
| Female | 32 | 36.50 | 2.90 | 20.28 | 5.77 | 16.13 | 5.52 | 36.41 | 10.48 | 38.78 | 10.45 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 54 | 46.09 | 3.61 | 25.35 | 6.76 | 20.93 | 6.43 | 46.28 | 12.33 | 45.28 | 11.93 |
| Male | 24 | 45.96 | 3.52 | 26.79 | 6.78 | 21.17 | 5.78 | 47.96 | 11.49 | 44.75 | 12.48 |
| Female | 30 | 46.20 | 3.74 | 24.20 | 6.72 | 20.73 | 7.00 | 44.93 | 13.00 | 47.70 | 11.68 |
| 4th Quarter | | | | | | | | | | | |
| Total | 54 | 59.89 | 4.35 | 32.69 | 6.76 | 27.87 | 7.61 | 60.56 | 13.53 | 57.07 | 13.07 |
| Male | 24 | 60.13 | 4.27 | 32.13 | 7.68 | 28.00 | 8.28 | 60.13 | 15.46 | 53.92 | 13.80 |
| Female | 30 | 59.70 | 4.48 | 33.13 | 6.03 | 27.77 | 7.17 | 60.90 | 12.04 | 59.60 | 12.09 |

Table 3.30. (Continued):

| 1979-1980 Grade 7 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|----------------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 26.80 | 7.14 | 23.45 | 6.26 | 21.24 | 6.39 | 16.36 | 5.92 | 61.05 | 16.54 |
| Male | 25.54 | 6.88 | 23.73 | 6.34 | 21.80 | 6.50 | 16.81 | 5.96 | 62.34 | 16.59 |
| Female | 27.81 | 7.21 | 23.23 | 6.22 | 20.78 | 6.29 | 16.00 | 5.89 | 60.02 | 16.53 |
| 1st Quarter | | | | | | | | | | |
| Total | 22.30 | 7.61 | 20.02 | 5.14 | 17.65 | 6.53 | 11.94 | 3.83 | 49.61 | 13.13 |
| Male | 21.85 | 7.75 | 22.00 | 3.39 | 19.77 | 7.16 | 12.08 | 4.17 | 53.85 | 14.62 |
| Female | 22.71 | 7.60 | 18.18 | 4.21 | 15.68 | 5.29 | 11.82 | 3.56 | 45.68 | 10.36 |
| 2nd Quarter | | | | | | | | | | |
| Total | 25.35 | 5.38 | 21.65 | 5.26 | 19.41 | 4.20 | 14.56 | 3.64 | 55.61 | 10.16 |
| Male | 23.32 | 4.38 | 21.68 | 6.55 | 19.45 | 4.40 | 15.68 | 3.21 | 56.82 | 12.11 |
| Female | 26.75 | 5.63 | 21.63 | 4.28 | 19.38 | 4.13 | 13.78 | 3.77 | 54.78 | 8.69 |
| 3rd Quarter | | | | | | | | | | |
| Total | 27.98 | 6.69 | 23.91 | 5.56 | 21.56 | 5.52 | 16.94 | 4.65 | 62.41 | 13.06 |
| Male | 26.54 | 5.98 | 23.42 | 5.19 | 21.46 | 6.10 | 17.75 | 4.58 | 62.63 | 13.07 |
| Female | 29.13 | 7.09 | 24.30 | 5.89 | 21.63 | 5.11 | 16.30 | 4.68 | 62.23 | 13.26 |
| 4th Quarter | | | | | | | | | | |
| Total | 31.57 | 5.25 | 28.24 | 5.94 | 26.33 | 5.64 | 22.00 | 6.06 | 76.57 | 15.98 |
| Male | 30.58 | 5.41 | 27.79 | 6.59 | 26.56 | 5.57 | 22.04 | 6.44 | 76.33 | 16.87 |
| Female | 32.67 | 5.07 | 28.60 | 5.45 | 26.20 | 5.78 | 21.97 | 5.84 | 76.77 | 15.52 |

Table 3.30. (Continued):

| 1980-1981 Grade 8 | Word Knowledge | | Reading | | Reading Total | | Language | |
|----------------------|-------------------|-------|-----------|------|------------------|-------|-----------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 29.32 | 9.79 | 23.00 | 8.71 | 52.32 | 17.31 | 48.12 | 14.65 |
| Male | 30.25 | 9.46 | 22.93 | 8.94 | 53.18 | 17.20 | 47.49 | 13.62 |
| Female | 28.58 | 10.01 | 23.07 | 8.56 | 51.64 | 17.45 | 48.63 | 15.46 |
| 1st Quarter | | | | | | | | |
| Total | 20.65 | 8.43 | 15.02 | 5.80 | 35.67 | 12.77 | 36.06 | 11.81 |
| Male | 22.08 | 8.54 | 14.73 | 4.79 | 36.81 | 12.50 | 38.92 | 11.93 |
| Female | 19.32 | 8.27 | 15.29 | 6.68 | 34.61 | 13.15 | 33.39 | 11.25 |
| 2nd Quarter | | | | | | | | |
| Total | 26.37 | 7.36 | 20.80 | 7.11 | 47.17 | 12.43 | 43.94 | 10.27 |
| Male | 30.23 | 7.47 | 22.36 | 8.38 | 52.59 | 13.57 | 42.32 | 10.71 |
| Female | 23.72 | 6.09 | 19.72 | 5.99 | 43.44 | 10.21 | 45.06 | 9.98 |
| 3rd Quarter | | | | | | | | |
| Total | 31.94 | 7.39 | 25.44 | 7.10 | 57.39 | 12.85 | 50.56 | 10.76 |
| Male | 30.83 | 7.91 | 24.13 | 7.82 | 54.96 | 14.04 | 50.08 | 11.15 |
| Female | 32.83 | 6.96 | 26.50 | 6.42 | 59.33 | 11.69 | 50.93 | 10.61 |
| 4th Quarter | | | | | | | | |
| Total | 38.31 | 5.79 | 30.76 | 6.00 | 69.07 | 10.56 | 61.93 | 11.99 |
| Male | 38.54 | 5.42 | 31.13 | 5.64 | 69.67 | 9.82 | 58.92 | 11.42 |
| Female | 38.13 | 6.16 | 30.47 | 6.35 | 68.60 | 11.25 | 64.33 | 12.07 |

Table 3.30. (Continued):

| 1980-1981 Grade 8 | Spelling | | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|----------------------|-----------|------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 30.69 | 6.87 | 25.56 | 6.54 | 23.13 | 6.78 | 19.30 | 6.37 | 67.99 | 18.04 |
| Male | 30.22 | 6.24 | 26.13 | 6.56 | 23.73 | 7.02 | 20.01 | 6.48 | 69.86 | 18.35 |
| Female | 31.06 | 6.35 | 25.11 | 6.52 | 22.64 | 6.57 | 18.73 | 6.25 | 66.48 | 17.72 |
| 1st Quarter | | | | | | | | | | |
| Total | 27.46 | 7.81 | 22.56 | 6.52 | 18.54 | 6.42 | 14.74 | 4.83 | 55.83 | 15.71 |
| Male | 29.12 | 7.61 | 25.00 | 6.99 | 20.38 | 6.71 | 15.73 | 5.68 | 61.12 | 17.63 |
| Female | 25.93 | 8.82 | 20.29 | 5.21 | 16.82 | 5.72 | 13.82 | 3.74 | 50.93 | 12.04 |
| 2nd Quarter | | | | | | | | | | |
| Total | 29.35 | 5.26 | 23.26 | 4.71 | 20.98 | 4.90 | 16.81 | 4.10 | 61.06 | 12.04 |
| Male | 28.18 | 4.94 | 22.95 | 4.90 | 21.41 | 5.72 | 17.68 | 4.70 | 62.05 | 13.85 |
| Female | 30.16 | 5.39 | 23.47 | 4.64 | 20.69 | 4.32 | 16.22 | 3.58 | 60.38 | 10.80 |
| 3rd Quarter | | | | | | | | | | |
| Total | 31.17 | 6.90 | 25.48 | 6.28 | 24.30 | 6.11 | 20.35 | 5.40 | 70.13 | 15.53 |
| Male | 30.13 | 6.43 | 25.29 | 6.62 | 24.21 | 7.04 | 20.75 | 4.99 | 70.25 | 16.69 |
| Female | 32.00 | 7.25 | 25.63 | 6.12 | 24.37 | 5.39 | 20.03 | 5.77 | 70.03 | 14.82 |
| 4th Quarter | | | | | | | | | | |
| Total | 34.76 | 5.08 | 30.94 | 5.02 | 28.69 | 4.99 | 25.30 | 5.49 | 84.93 | 13.80 |
| Male | 33.76 | 4.28 | 31.08 | 4.63 | 29.00 | 5.29 | 26.04 | 5.39 | 86.13 | 13.36 |
| Female | 35.87 | 5.45 | 30.83 | 5.38 | 28.43 | 4.81 | 24.70 | 5.58 | 83.97 | 14.30 |

Table 3.31. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 3: Steuben Middle School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|--------|--------|---------|---------|-------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 350.92 | 5752.31 | 131.81 | 70.23 | 3422.69 | 1.10 | 6.30 | 85.29 | 18.81 |
| F | 5.00 | 81.90 | 1.88 | | 181.93 | .06 | .33 | 4.53 | |
| P | .026 | <.001 | .135 | | <.001 | .809 | .800 | .004 | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 14.27 | 4750.30 | 51.76 | 67.07 | 1330.38 | 1330.38 | 14.51 | 16.98 | 17.03 |
| F | .21 | 70.82 | .77 | | 78.11 | 78.11 | .85 | 1.00 | |
| P | .645 | <.001 | .511 | | <.001 | <.001 | .467 | .395 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 506.70 | 20957.12 | 295.84 | 234.63 | 9020.85 | 3.12 | 33.38 | 176.50 | 44.93 |
| F | 2.16 | 89.32 | 1.26 | | 200.76 | .07 | .74 | 3.93 | |
| P | .143 | <.001 | .289 | | <.001 | .792 | .528 | .009 | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 64.24 | 12901.45 | 572.01 | 219.45 | 3047.44 | .92 | 3.55 | 2.99 | 38.23 |
| F | .29 | 58.79 | 2.61 | | 79.72 | .02 | .09 | .08 | |
| P | .589 | <.001 | .053 | | <.001 | .877 | .964 | .972 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 232.54 | 1298.97 | 84.49 | 64.05 | 1648.39 | 50.65 | 25.71 | 26.76 | 14.86 |
| F | 3.63 | 20.28 | 1.32 | | 110.94 | 3.41 | 1.73 | 1.80 | |
| P | .058 | <.001 | .269 | | <.001 | .066 | .162 | .148 | |

Table 3.31. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------------|--------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 65.85 | 1419.10 | 145.37 | 50.82 | 477.83 | 6.14 | 10.47 | 3.53 | 10.28 |
| F | 1.30 | 27.92 | 2.86 | | 46.50 | .60 | 1.02 | .34 | |
| P | .256 | <.001 | .038 | | <.001 | .440 | .385 | .794 | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 134.26 | 1750.08 | 89.25 | 51.40 | 386.06 | .26 | 18.22 | 1.60 | 10.34 |
| F | 2.61 | 34.05 | 1.74 | | 37.32 | .03 | 1.76 | .15 | |
| P | .108 | <.001 | .161 | | <.001 | .873 | .156 | .927 | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 137.97 | 2101.71 | 4.27 | 37.05 | 922.26 | 5.09 | 7.87 | 9.56 | 9.35 |
| F | 3.72 | 56.72 | .12 | | 98.59 | .54 | .84 | 1.02 | |
| P | .055 | <.001 | .951 | | <.001 | .462 | .473 | .384 | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 208 | 1 | 1 | 3 | 3 | 208 |
| Mean Square | 988.96 | 15649.12 | 459.39 | 335.14 | 5116.23 | 27.52 | 51.27 | 15.08 | 41.61 |
| F | 2.95 | 46.69 | 1.37 | | 124.16 | .66 | 1.23 | .36 | |
| P | .087 | <.001 | .253 | | <.001 | .417 | .299 | .78 | |

Table 3.32, Adjusted Means in Educational Achievement for Longitudinal Cohort 1, Cohort 2, and Cohort 3: Steuben Middle School

| | N | Word Knowledge \bar{X} | Reading \bar{X} | Reading Total \bar{X} | Language \bar{X} | Spelling \bar{X} |
|----------|-----|----------------------------------|-------------------------------|--------------------------------------|----------------------------|-----------------------|
| Cohort 1 | | | | | | |
| Total | 191 | 26.33 | 21.89 | 48.22 | 42.81 | 27.91 |
| Male | 97 | 27.17 | 22.21 | 49.37 | 41.59 | 27.28 |
| Female | 94 | 25.47 | 21.57 | 47.04 | 44.06 | 28.56 |
| Cohort 2 | | | | | | |
| Total | 247 | 24.49 | 20.42 | 44.92 | 44.63 | 28.81 |
| Male | 106 | 25.28 | 20.89 | 46.17 | 43.42 | 27.97 |
| Female | 141 | 23.90 | 20.07 | 43.97 | 45.54 | 29.44 |
| Cohort 3 | | | | | | |
| Total | 216 | 26.77 | 21.46 | 48.22 | 45.86 | 28.87 |
| Male | 96 | 27.65 | 21.55 | 49.19 | 45.29 | 28.01 |
| Female | 120 | 26.06 | 21.38 | 47.44 | 46.31 | 29.56 |
| | | Math Computation \bar{X} | Math Concepts \bar{X} | Math Problem Solving \bar{X} | Math Total \bar{X} | |
| Cohort 1 | | | | | | |
| Total | | 20.60 | 20.19 | 16.66 | 57.46 | |
| Male | | 20.55 | 20.37 | 17.10 | 58.02 | |
| Female | | 20.66 | 20.00 | 16.21 | 56.87 | |
| Cohort 2 | | | | | | |
| Total | | 23.05 | 20.96 | 17.23 | 61.24 | |
| Male | | 22.95 | 21.45 | 17.97 | 62.37 | |
| Female | | 23.12 | 20.60 | 16.67 | 60.39 | |
| Cohort 3 | | | | | | |
| Total | | 24.67 | 22.35 | 17.99 | 65.01 | |
| Male | | 25.09 | 22.94 | 18.58 | 66.61 | |
| Female | | 24.33 | 21.88 | 17.53 | 63.74 | |

Table 3.33. Tests of Significance (ANCOVA) of Differences in Educational Achievement and Comparison of Gains for Longitudinal Cohort 1, Cohort 2, and Cohort 3: Steuben Middle School

| Source | Sex(S) | Year(Y) | S X Y | Covariate | Error | Gain(G) | G X S | G X Y | G X S X Y | Error |
|-----------------------|---------|---------|-------|-----------|--------|----------|-------|--------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 774.60 | 639.35 | 2.76 | 65483.84 | 62.14 | 7068.01 | 8.31 | 74.90 | .54 | 14.33 |
| F | 12.47 | 10.29 | .04 | 1053.83 | | 493.22 | .58 | 5.23 | .04 | |
| P | <.001 | <.001 | .957 | <.001 | | <.001 | .447 | .006 | .963 | |
| <u>Reading</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 93.20 | 227.65 | 12.80 | 51327.00 | 57.99 | 4318.99 | 4.12 | 80.60 | 3.15 | 13.63 |
| F | 1.61 | 3.93 | .22 | 885.10 | | 316.89 | .30 | 5.91 | .23 | |
| P | .205 | .020 | .802 | <.001 | | <.001 | .583 | .003 | .79 | |
| <u>Reading Total</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 1405.16 | 1537.75 | 9.72 | 232760.60 | 201.65 | 22437.20 | .73 | 171.42 | 5.01 | 34.51 |
| F | 6.97 | 7.63 | .05 | 1154.25 | | 649.61 | .02 | 4.96 | .15 | |
| P | .008 | .001 | .953 | <.001 | | <.001 | .885 | .007 | .865 | |
| <u>Language</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 1122.05 | 888.16 | 58.77 | 176338.72 | 185.46 | 11098.01 | 5.44 | 234.58 | 13.71 | 37.41 |
| F | 6.05 | 4.79 | .32 | 950.84 | | 296.19 | .15 | 6.26 | .37 | |
| P | .014 | .009 | .729 | <.001 | | <.001 | .703 | .002 | .694 | |
| <u>Spelling</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 656.85 | 91.42 | 2.00 | 15740.90 | 59.65 | 3043.42 | 5.23 | 90.47 | 59.67 | 13.01 |
| F | 11.01 | 1.53 | .03 | 263.89 | | 233.96 | .40 | 6.95 | 4.59 | |
| P | .001 | .217 | .967 | <.001 | | <.001 | .526 | .001 | .011 | |

Table 3.31. (Continued):

| Source | Sex(S) | Year(Y) | S X Y | Covariate | Error | Gain(G) | G X S | G X Y | G X S X Y | Error |
|-----------------------------|---------|---------|-------|-----------|--------|----------|-------|--------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 8.39 | 1697.74 | 29.20 | 24587.24 | 44.12 | 3516.35 | 24.92 | 152.61 | 3.83 | 9.30 |
| F | .19 | 38.48 | .66 | 557.28 | | 377.90 | 2.68 | 16.40 | .41 | |
| P | .663 | <.001 | .516 | <.001 | | <.001 | .102 | <.001 | .663 | |
| <u>Math Concepts</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 185.43 | 516.24 | 12.47 | 29712.18 | 41.67 | 3292.37 | 2.32 | 163.61 | 33.40 | 10.3 |
| F | 4.45 | 12.39 | .30 | 712.98 | | 319.45 | .23 | 15.88 | 3.24 | |
| P | .035 | <.001 | .742 | <.001 | | <.001 | .635 | <.001 | .040 | |
| <u>Math Problem Solving</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 373.85 | 195.84 | 4.62 | 25856.37 | 34.00 | 2762.19 | .49 | 2.37 | 3.40 | 9.7 |
| F | 11.00 | 5.76 | .14 | 760.53 | | 282.22 | .05 | .24 | .35 | |
| P | .001 | .003 | .873 | <.001 | | <.001 | .823 | .785 | .707 | |
| <u>Math Total</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 2 | 2 | 1 | 647 | 1 | 1 | 2 | 2 | 648 |
| Mean Square | 1285.20 | 5990.53 | 74.18 | 240075.05 | 286.63 | 28640.35 | 17.38 | 654.99 | 75.39 | 40.3 |
| F | 4.48 | 20.90 | .26 | 837.57 | | 709.83 | .43 | 16.23 | 1.87 | |
| P | .035 | <.001 | .772 | <.001 | | <.001 | .512 | <.001 | .155 | |

Table 3.34. Mean Mental Ability and the Mean Educational Achievement for the 1977-78 Grade 8 Students Who Were Not Part of a Longitudinal Cohort: Steuben Middle School

| | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | |
|-----------------------|----------------|-----------|-------|----------------|-------|-----------|-------|---------------|-------|-----------|-------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 217 | 42.56 | 15.27 | 26.85 | 9.47 | 22.86 | 9.55 | 49.71 | 18.12 | 45.27 | 14.98 | 27.83 | 7.61 |
| Male | 97 | 43.88 | 16.50 | 28.01 | 10.65 | 24.28 | 10.30 | 52.29 | 20.11 | 43.72 | 15.82 | 26.45 | 7.79 |
| Female | 120 | 41.50 | 14.17 | 25.92 | 8.34 | 21.71 | 8.77 | 47.63 | 16.12 | 47.01 | 14.08 | 28.95 | 7.30 |
| 1st Quarter (Lowest) | | | | | | | | | | | | | |
| Total | 54 | 23.22 | 6.63 | 17.94 | 5.74 | 13.50 | 5.62 | 31.44 | 9.51 | 31.37 | 9.24 | 23.43 | 6.61 |
| Male | 22 | 21.45 | 7.55 | 16.86 | 5.51 | 12.95 | 5.43 | 29.82 | 9.61 | 27.32 | 7.47 | 20.95 | 5.19 |
| Female | 32 | 24.44 | 5.72 | 18.69 | 5.86 | 13.88 | 5.81 | 32.56 | 9.42 | 34.16 | 9.40 | 25.13 | 7.01 |
| 2nd Quarter | | | | | | | | | | | | | |
| Total | 55 | 36.36 | 3.54 | 23.09 | 7.11 | 19.44 | 7.13 | 42.53 | 12.99 | 38.95 | 10.59 | 26.07 | 7.40 |
| Male | 20 | 35.40 | 3.84 | 23.95 | 10.30 | 19.70 | 8.61 | 43.65 | 17.67 | 34.85 | 11.26 | 24.95 | 8.88 |
| Female | 35 | 36.91 | 3.28 | 22.60 | 4.52 | 19.29 | 6.27 | 41.89 | 9.61 | 41.29 | 9.58 | 25.13 | 6.47 |
| 3rd Quarter | | | | | | | | | | | | | |
| Total | 54 | 48.52 | 3.45 | 29.83 | 6.61 | 25.96 | 5.92 | 55.80 | 10.97 | 50.43 | 9.94 | 29.56 | 7.22 |
| Male | 26 | 48.15 | 3.96 | 29.50 | 6.84 | 26.23 | 5.49 | 55.73 | 10.60 | 44.73 | 9.19 | 26.85 | 7.24 |
| Female | 28 | 48.86 | 2.93 | 30.14 | 6.50 | 25.71 | 6.39 | 55.86 | 11.51 | 55.71 | 7.44 | 32.07 | 6.34 |
| 4th Quarter (Highest) | | | | | | | | | | | | | |
| Total | 54 | 62.26 | 5.36 | 36.61 | 6.00 | 32.59 | 6.71 | 69.20 | 11.70 | 60.46 | 10.73 | 32.31 | 6.15 |
| Male | 29 | 62.90 | 5.36 | 37.93 | 6.23 | 34.28 | 6.43 | 72.21 | 11.54 | 59.38 | 11.57 | 31.31 | 6.12 |
| Female | 25 | 61.52 | 5.38 | 35.08 | 5.46 | 30.64 | 6.62 | 65.72 | 11.12 | 61.72 | 9.74 | 33.48 | 6.10 |

Table 3.34. (Continued):

| | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|--------------------------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 21.64 | 7.48 | 21.13 | 7.59 | 18.29 | 6.97 | 61.04 | 20.61 |
| Male | 22.02 | 8.18 | 21.29 | 8.44 | 19.11 | 7.53 | 62.41 | 22.73 |
| Female | 21.33 | 6.88 | 21.00 | 6.85 | 17.62 | 6.44 | 59.93 | 18.75 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 15.80 | 4.95 | 14.85 | 5.13 | 12.33 | 4.28 | 42.94 | 12.04 |
| Male | 14.91 | 5.31 | 14.18 | 5.65 | 11.91 | 4.85 | 41.00 | 12.95 |
| Female | 16.41 | 4.68 | 15.31 | 4.78 | 12.63 | 3.89 | 44.28 | 11.39 |
| 2nd Quarter | | | | | | | | |
| Total | 18.31 | 5.62 | 17.71 | 5.88 | 14.98 | 4.86 | 50.98 | 14.52 |
| Male | 18.05 | 6.46 | 16.45 | 6.54 | 15.45 | 4.89 | 49.90 | 16.26 |
| Female | 18.46 | 5.17 | 18.43 | 5.44 | 14.71 | 4.90 | 51.60 | 13.65 |
| 3rd Quarter | | | | | | | | |
| Total | 23.26 | 5.47 | 23.94 | 5.80 | 20.17 | 4.76 | 67.37 | 13.07 |
| Male | 21.69 | 5.57 | 22.12 | 6.02 | 19.38 | 4.94 | 63.19 | 13.44 |
| Female | 24.71 | 5.05 | 25.64 | 5.12 | 20.89 | 4.56 | 71.25 | 11.64 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 29.24 | 5.78 | 28.07 | 5.48 | 25.72 | 5.08 | 83.04 | 15.08 |
| Male | 30.45 | 5.23 | 29.28 | 6.01 | 26.86 | 5.13 | 86.59 | 15.04 |
| Female | 27.84 | 6.16 | 26.68 | 4.53 | 24.40 | 4.78 | 78.92 | 14.33 |

Table 3.35. Mean Mental Ability and Mean Educational Achievement for the 1980-81 Grade 7 Students Who Were not Part of a Longitudinal Cohort: Steuben Middle School

| | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | |
|-----------------------|----------------|-----------|-------|----------------|------|-----------|------|---------------|-------|-----------|-------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 300 | 43.67 | 13.60 | 24.42 | 8.37 | 20.61 | 8.10 | 45.02 | 15.57 | 47.08 | 15.21 | 28.22 | 6.96 |
| Male | 140 | 42.30 | 12.97 | 23.84 | 7.94 | 19.86 | 7.35 | 43.70 | 14.31 | 43.95 | 13.86 | 27.03 | 6.78 |
| Female | 160 | 44.88 | 14.05 | 24.93 | 8.72 | 21.26 | 8.66 | 46.18 | 16.56 | 49.82 | 15.83 | 29.26 | 6.96 |
| 1st Quarter (Lowest) | | | | | | | | | | | | | |
| Total | 75 | 25.95 | 5.51 | 16.89 | 6.19 | 14.12 | 4.84 | 31.03 | 10.06 | 33.16 | 9.78 | 23.07 | 5.21 |
| Male | 38 | 25.92 | 5.83 | 17.95 | 6.79 | 14.71 | 5.29 | 32.66 | 11.02 | 32.97 | 9.73 | 22.61 | 5.08 |
| Female | 37 | 25.97 | 5.23 | 15.82 | 5.39 | 13.51 | 4.31 | 29.32 | 8.80 | 33.35 | 9.96 | 23.54 | 5.37 |
| 2nd Quarter | | | | | | | | | | | | | |
| Total | 75 | 39.13 | 2.65 | 22.05 | 5.23 | 17.59 | 4.36 | 39.64 | 8.04 | 43.49 | 10.58 | 26.92 | 5.61 |
| Male | 38 | 39.42 | 2.78 | 22.21 | 5.66 | 17.89 | 4.63 | 40.11 | 8.90 | 42.50 | 10.70 | 26.92 | 5.85 |
| Female | 35 | 38.84 | 2.51 | 21.89 | 4.84 | 17.27 | 4.10 | 39.16 | 7.14 | 44.51 | 10.49 | 26.92 | 5.43 |
| 3rd Quarter | | | | | | | | | | | | | |
| Total | 75 | 48.33 | 3.23 | 25.99 | 5.96 | 21.05 | 6.10 | 47.04 | 10.36 | 49.16 | 11.42 | 30.23 | 6.39 |
| Male | 36 | 48.47 | 3.06 | 25.92 | 6.76 | 21.17 | 6.29 | 47.08 | 11.65 | 46.22 | 11.69 | 28.64 | 6.97 |
| Female | 39 | 48.21 | 3.42 | 26.05 | 5.21 | 20.95 | 6.01 | 47.00 | 9.16 | 51.87 | 10.61 | 31.69 | 5.49 |
| 4th Quarter (Highest) | | | | | | | | | | | | | |
| Total | 75 | 61.28 | 4.86 | 32.73 | 6.79 | 29.67 | 7.06 | 62.40 | 12.97 | 62.51 | 11.89 | 32.67 | 6.58 |
| Male | 28 | 60.50 | 3.68 | 31.36 | 6.43 | 27.86 | 6.92 | 59.21 | 12.17 | 57.89 | 12.00 | 31.11 | 6.56 |
| Female | 47 | 61.74 | 5.44 | 33.55 | 6.93 | 30.74 | 7.00 | 64.30 | 13.18 | 65.26 | 11.05 | 33.60 | 6.49 |

Table 3.35. (Continued):

| | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | |
|--------------------------|---------------------|------|------------------|------|-------------------------|------|---------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 24.07 | 6.46 | 20.69 | 6.32 | 17.00 | 5.68 | 61.76 | 16.64 |
| Male | 22.90 | 6.21 | 19.81 | 6.17 | 16.30 | 5.53 | 59.01 | 15.89 |
| Female | 25.10 | 6.51 | 21.45 | 6.38 | 17.60 | 5.75 | 64.16 | 16.97 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 20.16 | 4.70 | 16.95 | 4.73 | 13.35 | 3.97 | 50.45 | 11.04 |
| Male | 19.61 | 4.29 | 17.03 | 4.83 | 13.61 | 4.36 | 50.24 | 11.06 |
| Female | 20.73 | 5.09 | 16.86 | 4.69 | 13.08 | 3.58 | 50.68 | 11.18 |
| 2nd Quarter | | | | | | | | |
| Total | 22.47 | 5.31 | 18.21 | 4.77 | 14.83 | 4.01 | 55.51 | 11.80 |
| Male | 21.74 | 4.72 | 17.87 | 4.70 | 14.05 | 3.58 | 53.66 | 10.46 |
| Female | 23.22 | 5.83 | 18.57 | 4.89 | 15.62 | 4.32 | 57.41 | 12.91 |
| 3rd Quarter | | | | | | | | |
| Total | 24.39 | 5.84 | 20.60 | 4.67 | 16.97 | 4.29 | 61.96 | 12.15 |
| Male | 23.72 | 5.74 | 20.25 | 5.23 | 17.11 | 4.59 | 61.08 | 12.14 |
| Female | 25.00 | 5.95 | 20.92 | 4.13 | 16.85 | 4.05 | 62.77 | 12.27 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 29.28 | 6.19 | 26.99 | 5.84 | 22.53 | 5.72 | 79.11 | 15.36 |
| Male | 27.89 | 7.49 | 25.68 | 6.78 | 21.96 | 5.94 | 75.54 | 18.79 |
| Female | 30.11 | 5.17 | 27.77 | 5.12 | 22.87 | 5.62 | 81.23 | 12.65 |

Table 4.1. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 6 Classes: Webster Transitional School

| | Parts of Speech | | | | | | | | Sentences | | | | Language Total | | | | Math | | | | SD | | |
|----------------|-----------------|----------------|-------|-------------|-------|-----|----------------|-------|-------------|-------|-----|----------------|----------------|-------------|-------|-----|----------------|-------|-------------|-------|----|-----------|----|
| | N | Mental Ability | | Achievement | | N | Mental Ability | | Achievement | | N | Mental Ability | | Achievement | | N | Mental Ability | | Achievement | | | | |
| | | \bar{X} | SD | \bar{X} | SD | | \bar{X} | SD | \bar{X} | SD | | \bar{X} | SD | \bar{X} | SD | | \bar{X} | SD | \bar{X} | SD | | \bar{X} | SD |
| | | | | | | | | | | | | | | | | | | | | | | | |
| GRADE 6 - FALL | | | | | | | | | | | | | | | | | | | | | | | |
| Fall, 1977-78 | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 108 | 115.87 | 13.31 | 82.20 | 29.03 | 165 | 116.85 | 13.32 | 9.62 | 10.06 | 167 | 116.72 | 13.36 | 93.25 | 35.21 | 193 | 115.94 | 13.32 | 46.82 | 30.86 | | | |
| Male | 94 | 116.36 | 13.49 | 76.44 | 30.34 | 81 | 117.58 | 13.68 | 8.68 | 10.38 | 81 | 117.58 | 13.68 | 85.83 | 38.10 | 96 | 117.05 | 13.33 | 47.42 | 33.76 | | | |
| Female | 94 | 115.37 | 13.17 | 87.96 | 26.58 | 84 | 116.14 | 13.01 | 10.52 | 9.71 | 86 | 115.91 | 13.08 | 100.23 | 30.87 | 97 | 114.85 | 13.28 | 46.24 | 27.86 | | | |
| Fall, 1978-79 | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 102 | 114.43 | 11.66 | 82.80 | 27.71 | 182 | 114.43 | 11.66 | 7.41 | 8.28 | 182 | 114.43 | 11.66 | 90.21 | 33.10 | 178 | 114.53 | 11.67 | 44.80 | 26.84 | | | |
| Male | 87 | 115.92 | 11.23 | 80.11 | 27.09 | 87 | 115.92 | 11.23 | 6.38 | 7.68 | 87 | 115.92 | 11.23 | 86.49 | 31.44 | 85 | 116.27 | 11.20 | 41.27 | 24.08 | | | |
| Female | 95 | 113.07 | 11.94 | 85.25 | 28.18 | 95 | 113.07 | 11.94 | 8.36 | 8.73 | 95 | 113.07 | 11.94 | 93.61 | 34.36 | 95 | 113.01 | 11.91 | 47.88 | 28.81 | | | |
| Fall, 1979-80 | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 180 | 113.13 | 11.19 | 85.74 | 25.95 | 180 | 113.13 | 11.19 | 7.09 | 8.44 | 180 | 113.13 | 11.19 | 92.34 | 30.97 | 183 | 113.04 | 11.33 | 57.48 | 34.75 | | | |
| Male | 73 | 113.32 | 10.60 | 80.79 | 22.87 | 73 | 113.32 | 10.60 | 4.62 | 6.35 | 73 | 113.32 | 10.60 | 85.41 | 25.65 | 76 | 113.37 | 10.61 | 53.47 | 32.09 | | | |
| Female | 107 | 113.00 | 11.63 | 89.12 | 27.45 | 107 | 113.00 | 11.63 | 8.79 | 9.26 | 107 | 113.00 | 11.63 | 97.91 | 33.30 | 107 | 112.80 | 11.85 | 60.32 | 36.39 | | | |

| Vocabulary | | | | | | | | Comprehension | | | | | | | |
|------------|--|----|--|----------------|--|----|--|---------------|--|----|--|----------------|--|----|--|
| N | | | | Mental Ability | | | | N | | | | Mental Ability | | | |
| \bar{X} | | SD | | \bar{X} | | SD | | \bar{X} | | SD | | \bar{X} | | SD | |

GRADE 6-SPRING

| | | | | | | | | | | | | | | | |
|-----------------|-----|--------|-------|-------|------|-----|--------|-------|-------|------|--|--|--|--|--|
| Spring, 1977-78 | | | | | | | | | | | | | | | |
| Total | 203 | 115.56 | 13.33 | 54.89 | 8.78 | 204 | 115.59 | 13.31 | 53.35 | 8.51 | | | | | |
| Male | 102 | 116.44 | 13.45 | 55.10 | 8.38 | 102 | 116.44 | 13.45 | 53.24 | 9.27 | | | | | |
| Female | 101 | 114.67 | 13.22 | 54.68 | 9.20 | 102 | 114.75 | 13.17 | 53.47 | 7.72 | | | | | |
| Spring, 1978-79 | | | | | | | | | | | | | | | |
| Total | 203 | 114.23 | 11.40 | 54.70 | 8.35 | 202 | 114.24 | 11.43 | 55.55 | 7.09 | | | | | |
| Male | 97 | 115.51 | 11.10 | 55.26 | 8.13 | 97 | 115.51 | 11.10 | 55.12 | 6.87 | | | | | |
| Female | 106 | 113.07 | 11.60 | 54.20 | 8.56 | 105 | 113.08 | 11.65 | 54.03 | 7.28 | | | | | |
| Spring, 1979-80 | | | | | | | | | | | | | | | |
| Total | 200 | 112.66 | 11.15 | 54.67 | 7.77 | 201 | 112.66 | 11.15 | 53.84 | 7.12 | | | | | |
| Male | 86 | 112.77 | 10.51 | 54.33 | 8.04 | 86 | 112.77 | 10.51 | 54.23 | 7.17 | | | | | |
| Female | 115 | 112.57 | 11.65 | 54.92 | 7.59 | 115 | 112.57 | 11.65 | 53.55 | 7.09 | | | | | |

Table 4.2. Adjusted Means in Educational Achievement for Three Successive Grade 6 Classes: Webster Transitional School

| | Parts of Speech | | Sentences | | Language Total | | Math | |
|------------------|-----------------|-----------|---------------|-----------|----------------|-----------|------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| GRADE 6 - FALL | | | | | | | | |
| Fall, 1977-78 | | | | | | | | |
| Total | 188 | 80.73 | 165 | 9.15 | 167 | 90.61 | 193 | 44.85 |
| Male | 94 | 74.44 | 81 | 8.05 | 81 | 82.06 | 96 | 43.89 |
| Female | 94 | 87.02 | 84 | 10.21 | 86 | 98.66 | 97 | 45.79 |
| Fall, 1978-79 | | | | | | | | |
| Total | 182 | 82.86 | 182 | 7.48 | 182 | 90.57 | 178 | 44.80 |
| Male | 87 | 78.59 | 87 | 6.12 | 87 | 84.91 | 83 | 38.84 |
| Female | 95 | 86.78 | 95 | 8.73 | 95 | 95.76 | 95 | 50.01 |
| Fall, 1979-80 | | | | | | | | |
| Total | 180 | 87.21 | 180 | 7.45 | 180 | 94.92 | 183 | 59.56 |
| Male | 73 | 82.06 | 73 | 4.94 | 73 | 87.24 | 76 | 55.10 |
| Female | 107 | 90.73 | 107 | 9.17 | 107 | 100.15 | 107 | 62.73 |
| | | | | | | | | |
| | Vocabulary | | Comprehension | | | | | |
| | N | \bar{X} | N | \bar{X} | | | | |
| GRADE 6 - SPRING | | | | | | | | |
| Spring, 1977-78 | | | | | | | | |
| Total | 203 | 54.27 | 204 | 52.79 | | | | |
| Male | 102 | 54.10 | 102 | 52.34 | | | | |
| Female | 101 | 54.46 | 102 | 53.24 | | | | |
| Spring, 1978-79 | | | | | | | | |
| Total | 203 | 54.67 | 202 | 54.53 | | | | |
| Male | 97 | 54.67 | 97 | 54.60 | | | | |
| Female | 106 | 54.68 | 105 | 54.46 | | | | |
| Spring, 1979-80 | | | | | | | | |
| Total | 200 | 55.29 | 200 | 54.42 | | | | |
| Male | 86 | 54.94 | 86 | 54.79 | | | | |
| Female | 114 | 55.56 | 114 | 54.14 | | | | |

Table 4.3. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Successive Grade 6 Classes Webster Transitional School

| Source | Class(C) | Sex(S) | C X S | Error |
|-------------------------|----------|----------|---------|--------|
| <u>GRADE 6 - FALL</u> | | | | |
| <u>Parts of Speech</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 543 |
| Mean Square | 1472.31 | 13018.44 | 268.45 | 580.10 |
| F | 2.54 | 22.44 | .46 | |
| P | .08 | <.001 | .630 | |
| <u>Sentences</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 520 |
| Mean Square | 203.00 | 1168.92 | 50.96 | 70.95 |
| F | 2.86 | 16.48 | .718 | |
| P | .058 | <.001 | .488 | |
| <u>Language Total</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 522 |
| Mean Square | 645.51 | 23497.46 | 366.27 | 817.48 |
| F | .79 | 28.74 | .45 | |
| P | .46 | <.001 | .639 | |
| <u>Math</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 547 |
| Mean Square | 12152.66 | 6474.85 | 1016.01 | 672.69 |
| F | 18.07 | 9.63 | 1.51 | |
| P | <.001 | .002 | .222 | |
| <u>GRADE 6 - SPRING</u> | | | | |
| <u>Vocabulary</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 600 |
| Mean Square | 50.21 | 18.54 | 5.91 | 41.61 |
| F | 1.21 | .45 | .13 | |
| P | .30 | .51 | .87 | |
| <u>Comprehension</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 600 |
| Mean Square | 197.18 | .43 | 30.16 | 35.62 |
| F | 5.54 | .01 | .85 | |
| P | .004 | .91 | .43 | |

Table 4.4. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 7 Classes:
Webster Transitional School

| | Mental Ability | | | Parts of Speech | | Mental Ability | | | Sentences | | Mental Ability | | | Language Total | |
|-----------------------|----------------|-----------|-------|-----------------|-------|----------------|-----------|-------|-----------|-------|----------------|-----------|-------|----------------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD |
| GRADE 7-FALL | | | | | | | | | | | | | | | |
| 1978-79 | | | | | | | | | | | | | | | |
| Total | 197 | 115.67 | 13.14 | 121.16 | 31.45 | 189 | 116.19 | 13.13 | 21.59 | 15.66 | 190 | 116.17 | 13.10 | 143.12 | 44.17 |
| Male | 98 | 116.50 | 13.28 | 114.32 | 35.15 | 92 | 117.09 | 13.37 | 20.02 | 15.82 | 93 | 117.03 | 13.31 | 135.01 | 48.59 |
| Female | 99 | 115.04 | 13.03 | 127.93 | 25.74 | 97 | 115.34 | 12.90 | 23.07 | 15.45 | 97 | 115.34 | 12.90 | 150.90 | 38.14 |
| 1979-80 | | | | | | | | | | | | | | | |
| Total | 200 | 114.60 | 11.43 | 120.43 | 30.23 | 200 | 114.60 | 11.43 | 22.42 | 16.52 | 200 | 114.60 | 11.43 | 142.87 | 43.48 |
| Male | 97 | 116.10 | 11.10 | 115.98 | 31.50 | 97 | 116.10 | 11.10 | 21.53 | 16.69 | 97 | 116.10 | 11.10 | 137.49 | 44.61 |
| Female | 103 | 113.17 | 11.70 | 124.62 | 28.51 | 103 | 113.17 | 11.70 | 23.25 | 16.40 | 103 | 113.17 | 11.70 | 147.93 | 41.99 |
| 1980-81 | | | | | | | | | | | | | | | |
| Total | 189 | 112.86 | 11.10 | 135.07 | 27.53 | 189 | 112.86 | 11.10 | 30.07 | 18.15 | 189 | 112.86 | 11.10 | 165.14 | 43.33 |
| Male | 79 | 113.18 | 10.32 | 126.54 | 25.61 | 79 | 113.18 | 10.32 | 25.66 | 15.72 | 79 | 113.18 | 10.32 | 152.20 | 38.56 |
| Female | 110 | 112.64 | 11.67 | 141.19 | 27.34 | 110 | 112.64 | 11.67 | 33.25 | 19.16 | 110 | 112.64 | 11.67 | 174.44 | 44.33 |
| | Mental Ability | | | Parts of Speech | | Mental Ability | | | Sentences | | Mental Ability | | | Language Total | |
| | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD |
| GRADE 7-SPRING | | | | | | | | | | | | | | | |
| 1978-79 | | | | | | | | | | | | | | | |
| Total | 200 | 115.83 | 13.12 | 159.82 | 29.45 | 200 | 115.83 | 13.12 | 44.33 | 19.75 | 200 | 115.83 | 13.12 | 203.86 | 47.23 |
| Male | 100 | 116.52 | 13.26 | 157.54 | 31.04 | 100 | 116.52 | 13.26 | 42.50 | 20.05 | 100 | 116.52 | 13.26 | 199.50 | 49.27 |
| Female | 100 | 115.14 | 13.00 | 162.09 | 27.75 | 100 | 115.14 | 13.00 | 46.16 | 19.36 | 100 | 115.14 | 13.00 | 208.22 | 44.91 |
| 1979-80 | | | | | | | | | | | | | | | |
| Total | 203 | 114.54 | 11.41 | 162.80 | 25.69 | 203 | 114.54 | 11.41 | 45.82 | 18.94 | 203 | 114.54 | 11.41 | 208.62 | 42.69 |
| Male | 97 | 116.10 | 11.00 | 159.60 | 26.08 | 97 | 116.10 | 11.00 | 43.98 | 19.23 | 97 | 116.10 | 11.00 | 203.58 | 43.00 |
| Female | 106 | 113.11 | 11.64 | 165.74 | 25.09 | 106 | 113.11 | 11.64 | 47.50 | 18.60 | 106 | 113.11 | 11.64 | 213.24 | 42.08 |
| 1980-81 | | | | | | | | | | | | | | | |
| Total | 189 | 112.86 | 11.10 | 167.59 | 25.74 | 189 | 112.86 | 11.10 | 49.06 | 18.38 | 189 | 112.86 | 11.10 | 216.71 | 42.05 |
| Male | 79 | 113.18 | 10.32 | 160.49 | 25.28 | 79 | 113.18 | 10.32 | 44.11 | 17.47 | 79 | 113.18 | 10.32 | 204.78 | 39.72 |
| Female | 110 | 112.64 | 11.67 | 172.69 | 24.95 | 110 | 112.64 | 11.67 | 52.62 | 18.27 | 110 | 112.64 | 11.67 | 225.27 | 41.75 |

Table 4.4. (Continued):

| | Mental Ability | | | Math | |
|---------------------|----------------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD |
| <u>GRADE 7-FALL</u> | | | | | |
| 1978-79 | | | | | |
| Total | 202 | 115.81 | 13.18 | 104.07 | 52.36 |
| Male | 102 | 116.76 | 13.23 | 102.64 | 53.46 |
| Female | 100 | 114.84 | 13.12 | 105.54 | 51.44 |
| 1979-80 | | | | | |
| Total | 195 | 114.73 | 11.49 | 116.78 | 48.05 |
| Male | 92 | 116.22 | 11.18 | 115.00 | 46.01 |
| Female | 103 | 113.40 | 11.65 | 118.37 | 49.98 |
| 1980-81 | | | | | |
| Total | 192 | 112.83 | 11.19 | 122.01 | 47.45 |
| Male | 81 | 113.40 | 10.29 | 118.30 | 45.08 |
| Female | 111 | 112.42 | 11.83 | 124.71 | 49.13 |

| | Mental Ability | | | Vocabulary | | Comprehension | |
|-----------------------|----------------|-----------|-------|------------|------|---------------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| <u>GRADE 7-SPRING</u> | | | | | | | |
| 1978-79 | | | | | | | |
| Total | 215 | 115.21 | 13.53 | 54.69 | 8.02 | 55.66 | 7.68 |
| Male | 109 | 116.31 | 13.37 | 55.72 | 8.20 | 55.76 | 8.11 |
| Female | 106 | 114.08 | 13.66 | 53.63 | 7.73 | 55.55 | 7.25 |
| 1979-80 | | | | | | | |
| Total | 206 | 114.44 | 11.45 | 55.69 | 8.02 | 56.84 | 8.00 |
| Male | 101 | 115.68 | 11.19 | 55.98 | 8.52 | 57.74 | 8.61 |
| Female | 105 | 113.24 | 11.62 | 55.41 | 7.53 | 55.96 | 7.31 |
| 1980-81 | | | | | | | |
| Total | 190 | 113.02 | 11.17 | 51.95 | 7.67 | 58.54 | 7.52 |
| Male | 79 | 113.44 | 10.53 | 51.68 | 7.05 | 59.19 | 7.26 |
| Female | 111 | 112.71 | 11.64 | 52.14 | 8.11 | 58.08 | 7.71 |

Table 4.5. Adjusted Means in Educational Achievement for Three Successive Grade 7 Classes: Webster Transitional School

| | Parts of Speech | | Sentences | | Language Total | | Math | | | |
|-----------------------|-----------------|-----------|-----------|-----------|----------------|-----------|------------|-----------|---------------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | | |
| <u>GRADE 7 - FALL</u> | | | | | | | | | | |
| 1978-79 | | | | | | | | | | |
| Total | 197 | 119.27 | 189 | 20.46 | 190 | 139.75 | 202 | 100.89 | | |
| Male | 98 | 111.40 | 92 | 18.28 | 93 | 129.84 | 102 | 97.17 | | |
| Female | 99 | 127.07 | 97 | 22.53 | 97 | 149.25 | 100 | 104.68 | | |
| 1979-80 | | | | | | | | | | |
| Total | 200 | 120.20 | 200 | 22.38 | 200 | 142.77 | 195 | 116.19 | | |
| Male | 97 | 113.62 | 97 | 20.46 | 97 | 134.26 | 92 | 110.84 | | |
| Female | 103 | 126.39 | 103 | 24.19 | 103 | 150.78 | 103 | 120.97 | | |
| 1980-81 | | | | | | | | | | |
| Total | 189 | 137.28 | 189 | 31.23 | 189 | 168.64 | 192 | 125.95 | | |
| Male | 79 | 128.31 | 79 | 26.60 | 79 | 155.05 | 81 | 120.90 | | |
| Female | 110 | 143.72 | 110 | 34.56 | 110 | 178.41 | 111 | 129.64 | | |
| | | | | | | | | | | |
| | Parts of Speech | | Sentences | | Language Total | | Vocabulary | | Comprehension | |
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| <u>GRADE 7-SPRING</u> | | | | | | | | | | |
| 1978-79 | | | | | | | | | | |
| Total | 200 | 158.07 | 200 | 43.32 | 200 | 201.10 | 215 | 54.25 | 215 | 55.21 |
| Male | 100 | 154.92 | 100 | 40.99 | 100 | 195.36 | 109 | 54.77 | 109 | 54.80 |
| Female | 100 | 161.21 | 100 | 45.65 | 100 | 206.83 | 106 | 53.72 | 106 | 55.64 |
| 1979-80 | | | | | | | | | | |
| Total | 203 | 162.68 | 203 | 45.74 | 203 | 208.42 | 206 | 55.61 | 206 | 56.76 |
| Male | 97 | 157.51 | 97 | 42.78 | 97 | 200.27 | 101 | 55.33 | 101 | 57.08 |
| Female | 106 | 167.41 | 106 | 48.46 | 106 | 215.88 | 105 | 55.88 | 105 | 56.45 |
| 1980-81 | | | | | | | | | | |
| Total | 189 | 169.58 | 189 | 50.21 | 189 | 219.85 | 190 | 52.53 | 190 | 59.13 |
| Male | 79 | 162.08 | 79 | 45.03 | 79 | 207.30 | 79 | 52.06 | 79 | 59.58 |
| Female | 110 | 174.96 | 110 | 53.92 | 110 | 228.86 | 111 | 52.86 | 111 | 58.81 |

Table 4.6. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Successive Grade 7 Classes: Webster Transitional School

| Source | Class(C) | Sex(S) | C X S | Error |
|-------------------------|----------|----------|---------|---------|
| GRADE 7 - FALL | | | | |
| <u>Parts of Speech</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 579 |
| Mean Square | 16770.89 | 30824.31 | 126.88 | 573.13 |
| F | 29.26 | 53.78 | .22 | |
| P | <.001 | <.001 | .801 | |
| <u>Sentences</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 571 |
| Mean Square | 5380.62 | 4012.75 | 249.55 | 212.24 |
| F | 25.35 | 18.91 | 1.18 | |
| P | <.001 | <.001 | .309 | |
| <u>Language Total</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 572 |
| Mean Square | 41125.61 | 55651.83 | 560.59 | 1237.25 |
| F | 33.24 | 44.98 | .45 | |
| P | <.001 | <.001 | .636 | |
| <u>Math</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 582 |
| Mean Square | 29228.68 | 11200.27 | 84.31 | 1624.06 |
| F | 18.00 | 6.90 | .05 | |
| P | <.001 | .009 | .949 | |
| GRADE 7 - SPRING | | | | |
| <u>Parts of Speech</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 585 |
| Mean Square | 5211.14 | 13673.28 | 523.69 | 494.10 |
| F | 10.55 | 27.67 | 1.06 | |
| P | <.001 | <.001 | .347 | |
| <u>Sentences</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 585 |
| Mean Square | 1824.43 | 5993.22 | 231.45 | 282.58 |
| F | 6.46 | 21.21 | .82 | |
| P | .002 | <.001 | .441 | |
| <u>Language Total</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 585 |
| Mean Square | 13767.99 | 38280.76 | 1229.20 | 1346.53 |
| F | 10.23 | 28.43 | .91 | |
| P | <.001 | <.001 | .402 | |
| <u>Vocabulary</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 604 |
| Mean Square | 480.56 | 1.56 | 52.11 | 31.14 |
| F | 15.43 | .05 | 1.67 | |
| P | <.001 | .823 | .188 | |
| <u>Comprehension</u> | | | | |
| Degrees of Freedom | 2 | 1 | 2 | 604 |
| Mean Square | 786.63 | 5.25 | 40.85 | 27.48 |
| F | 28.63 | .19 | 1.49 | |
| P | <.001 | .662 | .227 | |

Table 4.7. Mean Mental Ability and Mean Educational Achievement for Two Successive Grade 8 Classes: Webster Transitional School

| Mental Ability | | | | | | Math | | Mental Ability | | | | | | Parts of Speech | | Sentences | | |
|----------------|-----------|--------|-----------|-----------|--------|----------------|-----------|----------------|-----------|----------------|-----------|------------|-------|-----------------|-----------|-----------|--|--|
| N | \bar{X} | SD | \bar{X} | SD | | N | \bar{X} | SD | \bar{X} | SD | | \bar{X} | SD | N | \bar{X} | SD | | |
| GRADE 8-FALL | | | | | | GRADE 8-SPRING | | | | | | | | | | | | |
| 1979-80 | | | | | | 1979-80 | | | | | | | | | | | | |
| Total | 212 | 115.52 | 13.22 | 160.19 | 48.10 | Total | 212 | 115.29 | 13.21 | 168.58 | 25.95 | 212 | 52.15 | 16.55 | | | | |
| Male | 107 | 116.57 | 13.26 | 157.89 | 47.36 | Male | 107 | 116.10 | 13.28 | 165.85 | 27.03 | 107 | 49.79 | 17.14 | | | | |
| Female | 105 | 114.46 | 13.15 | 162.53 | 48.96 | Female | 105 | 114.46 | 13.15 | 171.37 | 24.62 | 105 | 54.55 | 15.65 | | | | |
| 1980-81 | | | | | | 1980-81 | | | | | | | | | | | | |
| Total | 203 | 114.41 | 11.45 | 167.44 | 43.87 | Total | 201 | 114.41 | 11.51 | 171.46 | 22.61 | 201 | 54.22 | 13.29 | | | | |
| Male | 96 | 115.78 | 11.24 | 166.22 | 43.38 | Male | 94 | 115.84 | 11.32 | 167.94 | 23.24 | 94 | 51.86 | 15.28 | | | | |
| Female | 107 | 113.18 | 11.56 | 168.54 | 44.49 | Female | 107 | 113.15 | 11.59 | 174.56 | 21.69 | 107 | 56.30 | 15.06 | | | | |
| Language Total | | | | | | Mental Ability | | Math | | Mental Ability | | Vocabulary | | Comprehension | | | | |
| N | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | | | |
| GRADE 8-SPRING | | | | | | | | | | | | | | | | | | |
| 1979-80 | | | | | | | | | | | | | | | | | | |
| Total | 212 | 220.31 | 41.74 | 213 | 115.52 | 13.19 | 207.72 | 33.69 | 215 | 115.21 | 13.53 | 55.52 | 8.11 | 215 | 55.07 | 8.85 | | |
| Male | 107 | 214.79 | 43.91 | 108 | 116.55 | 13.20 | 206.94 | 34.82 | 109 | 116.31 | 13.37 | 55.61 | 8.23 | 109 | 55.70 | 8.72 | | |
| Female | 105 | 225.92 | 38.81 | 105 | 114.46 | 13.15 | 208.51 | 32.64 | 106 | 114.08 | 13.66 | 55.42 | 8.02 | 106 | 54.42 | 8.97 | | |
| 1980-81 | | | | | | | | | | | | | | | | | | |
| Total | 201 | 225.79 | 36.39 | 202 | 114.45 | 11.47 | 214.18 | 27.78 | 201 | 114.38 | 11.29 | 53.65 | 8.28 | 201 | 58.12 | 7.72 | | |
| Male | 94 | 220.01 | 36.92 | 95 | 115.88 | 11.25 | 214.76 | 26.40 | 94 | 115.85 | 10.76 | 54.47 | 8.26 | 94 | 59.01 | 7.80 | | |
| Female | 107 | 230.86 | 35.32 | 107 | 113.18 | 11.56 | 213.66 | 29.05 | 107 | 113.08 | 11.63 | 52.93 | 8.27 | 107 | 57.35 | 7.60 | | |

Table 4.8. Adjusted Means in Educational Achievement for Two Successive Grade 8 Classes: Webster Transitional School

| | | Math | | | | | | | | | | | |
|-----------------------|--|-----------------|-----------|-----------|-----------|----------------|-----------|------|-----------|------------|-----------|---------------|-----------|
| | | N | \bar{X} | | | | | | | | | | |
| <u>GRADE 8 - FALL</u> | | | | | | | | | | | | | |
| 1979-80 | | | | | | | | | | | | | |
| Total | | 212 | 159.03 | | | | | | | | | | |
| Male | | 107 | 154.49 | | | | | | | | | | |
| Female | | 105 | 163.64 | | | | | | | | | | |
| 1980-81 | | | | | | | | | | | | | |
| Total | | 203 | 168.66 | | | | | | | | | | |
| Male | | 96 | 164.51 | | | | | | | | | | |
| Female | | 107 | 172.38 | | | | | | | | | | |
| | | Parts of Speech | | Sentences | | Language Total | | Math | | Vocabulary | | Comprehension | |
| | | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| <u>GRADE 8-SPRING</u> | | | | | | | | | | | | | |
| 1979-80 | | | | | | | | | | | | | |
| Total | | 212 | 168.05 | 212 | 51.84 | 212 | 219.45 | 213 | 206.97 | 215 | 55.32 | 215 | 54.87 |
| Male | | 107 | 164.30 | 107 | 48.89 | 107 | 212.31 | 108 | 204.71 | 109 | 54.88 | 109 | 54.98 |
| Female | | 105 | 171.87 | 105 | 54.84 | 105 | 226.73 | 105 | 209.29 | 106 | 55.78 | 106 | 54.76 |
| 1980-81 | | | | | | | | | | | | | |
| Total | | 201 | 172.03 | 201 | 54.55 | 201 | 226.69 | 202 | 214.97 | 201 | 53.86 | 201 | 58.33 |
| Male | | 94 | 166.72 | 94 | 51.15 | 94 | 218.05 | 95 | 213.48 | 94 | 53.96 | 94 | 58.51 |
| Female | | 107 | 176.69 | 107 | 57.54 | 107 | 234.27 | 107 | 216.29 | 107 | 53.77 | 107 | 58.17 |

Table 4.9. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Two Successive Grade 8 Classes; Webster Transitional School

| | Class | Sex | C X S | Error |
|-------------------------|---------|----------|--------|---------|
| <u>GRADE 8 - FALL</u> | | | | |
| <u>Math</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 410 |
| Mean Square | 9083.48 | 7433.79 | 42.14 | 1439.52 |
| F | 6.31 | 5.16 | .03 | |
| P | .012 | .024 | .864 | |
| <u>GRADE 8 - SPRING</u> | | | | |
| <u>Parts of Speech</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 408 |
| Mean Square | 1343.75 | 7860.75 | 148.76 | 351.08 |
| F | 3.83 | 22.39 | .424 | |
| P | .051 | <.001 | .515 | |
| <u>Sentences</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 408 |
| Mean Square | 630.33 | 3887.19 | 4.90 | 170.07 |
| F | 3.71 | 22.86 | .03 | |
| P | .055 | <.001 | .865 | |
| <u>Language Total</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 4 |
| Mean Square | 4538.88 | 23971.36 | 83.95 | 90 |
| F | 5.01 | 26.46 | .09 | |
| P | .026 | <.001 | .761 | |
| <u>Math</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 410 |
| Mean Square | 6420.30 | 1403.02 | 81.28 | 645.90 |
| F | 9.94 | 2.17 | .13 | |
| P | .002 | .141 | .723 | |
| <u>Vocabulary</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 411 |
| Mean Square | 222.97 | 13.20 | 30.95 | 30.00 |
| F | 7.43 | .44 | 1.03 | |
| P | .007 | .507 | .310 | |
| <u>Comprehension</u> | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 411 |
| Mean Square | 1245.93 | 8.02 | .44 | 33.71 |
| F | 36.97 | .234 | .01 | |
| P | <.001 | .626 | .910 | |

Table 4.10. Mean Mental Ability and Mean Educational Achievement in Language Arts for Longitudinal Cohort 1: Webster Transitional School

| | Fall, 1977 (Grade 6) | | | | | | | | Fall, 1978 (Grade 7) | | | | | | | |
|-------------|----------------------|-----------|-------|--------------------|-------|-----------|-------|-------------------|----------------------|--------------------|-------|-----------|-------|-------------------|-------|--|
| | Mental Ability | | | Parts of Speech | | Sentences | | Language Total | | Parts of Speech | | Sentences | | Language Total | | |
| | | | | | | | | | | | | | | | | |
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | |
| Total | 163 | 116.90 | 13.39 | 84.36 | 28.83 | 9.60 | 10.11 | 93.34 | 35.42 | 123.55 | 31.22 | 22.08 | 15.72 | 145.47 | 44.20 | |
| Male | 80 | 117.61 | 13.76 | 78.43 | 30.88 | 8.70 | 10.45 | 85.93 | 38.33 | 116.15 | 34.68 | 20.06 | 15.59 | 136.19 | 48.14 | |
| Female | 83 | 116.20 | 13.07 | 90.08 | 25.62 | 10.47 | 9.76 | 100.49 | 30.95 | 130.67 | 25.73 | 24.02 | 15.68 | 154.42 | 38.22 | |
| 1st Quarter | | | | | | | | | | | | | | | | |
| Total | 40 | 100.15 | 6.76 | 67.50 | 27.15 | 6.15 | 6.88 | 73.75 | 30.46 | 98.20 | 29.48 | 12.05 | 12.48 | 110.25 | 38.85 | |
| Male | 18 | 99.44 | 6.65 | 52.06 | 25.97 | 4.33 | 4.87 | 56.61 | 27.01 | 77.61 | 18.34 | 7.11 | 7.38 | 84.72 | 22.95 | |
| Female | 22 | 100.73 | 6.94 | 80.14 | 21.25 | 7.64 | 7.97 | 87.77 | 25.97 | 115.05 | 26.10 | 16.09 | 14.40 | 131.14 | 36.90 | |
| 2nd Quarter | | | | | | | | | | | | | | | | |
| Total | 41 | 112.22 | 2.06 | 80.93 | 28.99 | 7.88 | 8.66 | 86.37 | 36.25 | 120.07 | 28.22 | 20.63 | 11.67 | 140.22 | 36.99 | |
| Male | 20 | 112.20 | 1.91 | 76.20 | 31.20 | 6.25 | 9.10 | 77.45 | 39.31 | 111.35 | 27.25 | 19.10 | 12.87 | 130.45 | 37.58 | |
| Female | 21 | 112.24 | 2.23 | 85.43 | 26.69 | 9.43 | 8.12 | 94.86 | 31.69 | 128.38 | 27.18 | 22.10 | 10.50 | 149.52 | 34.77 | |
| 3rd Quarter | | | | | | | | | | | | | | | | |
| Total | 40 | 120.10 | 3.04 | 90.00 | 26.59 | 8.30 | 8.37 | 98.18 | 31.23 | 128.95 | 21.59 | 22.35 | 14.70 | 151.23 | 33.37 | |
| Male | 21 | 120.67 | 2.63 | 82.57 | 24.96 | 6.90 | 7.21 | 89.48 | 27.86 | 121.38 | 22.17 | 18.67 | 11.44 | 140.05 | 30.21 | |
| Female | 19 | 119.47 | 3.39 | 98.21 | 26.54 | 9.84 | 9.44 | 107.79 | 32.64 | 137.32 | 17.97 | 26.42 | 17.01 | 163.58 | 33.05 | |
| 4th Quarter | | | | | | | | | | | | | | | | |
| Total | 42 | 134.36 | 5.89 | 98.40 | 23.85 | 15.81 | 12.79 | 114.21 | 31.21 | 145.93 | 24.98 | 32.79 | 16.48 | 178.67 | 38.59 | |
| Male | 21 | 135.29 | 6.01 | 99.00 | 23.49 | 16.57 | 13.74 | 115.57 | 34.03 | 148.52 | 27.92 | 33.48 | 16.83 | 181.90 | 42.74 | |
| Female | 21 | 133.43 | 5.76 | 97.81 | 24.76 | 15.05 | 12.05 | 112.86 | 28.89 | 143.33 | 22.03 | 32.10 | 16.52 | 175.43 | 34.70 | |

Table 4.10. (Continued):

| | Spring, 1979 (Grade 7) | | | | | | Spring, 1980 (Grade 8) | | | | | |
|-------------|------------------------|-------|-----------|-------|----------------|-------|------------------------|-------|-----------|-------|----------------|-------|
| | Parts of Speech | | Sentences | | Language Total | | Parts of Speech | | Sentences | | Language Total | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 161.61 | 29.46 | 44.87 | 20.12 | 206.33 | 47.61 | 171.39 | 25.34 | 53.55 | 16.61 | 224.99 | 40.32 |
| Male | 158.79 | 31.21 | 43.39 | 20.34 | 201.95 | 49.34 | 168.11 | 27.05 | 51.13 | 17.22 | 219.35 | 42.41 |
| Female | 164.33 | 27.58 | 46.30 | 19.93 | 210.55 | 45.77 | 174.54 | 23.31 | 55.88 | 15.75 | 230.42 | 37.66 |
| 1st Quarter | | | | | | | | | | | | |
| Total | 137.13 | 31.49 | 30.53 | 19.65 | 167.65 | 49.41 | 148.83 | 26.04 | 38.18 | 15.60 | 187.03 | 39.03 |
| Male | 128.33 | 28.82 | 24.83 | 14.55 | 153.17 | 41.32 | 136.67 | 21.68 | 30.44 | 10.98 | 167.17 | 27.86 |
| Female | 144.32 | 32.38 | 35.18 | 22.26 | 179.50 | 53.16 | 158.77 | 25.47 | 44.50 | 16.16 | 203.27 | 39.83 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 162.17 | 24.35 | 45.63 | 17.77 | 207.66 | 40.91 | 168.56 | 20.19 | 53.44 | 14.33 | 222.20 | 32.48 |
| Male | 154.40 | 27.81 | 41.65 | 19.10 | 196.05 | 45.28 | 163.35 | 21.88 | 50.00 | 13.75 | 213.75 | 33.15 |
| Female | 169.57 | 18.24 | 49.43 | 15.95 | 218.71 | 33.72 | 173.52 | 17.52 | 56.71 | 14.42 | 230.24 | 30.45 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 168.25 | 23.46 | 49.48 | 19.09 | 217.28 | 38.75 | 175.93 | 18.38 | 57.00 | 13.87 | 232.93 | 30.92 |
| Male | 169.19 | 18.86 | 53.19 | 17.02 | 221.52 | 31.48 | 176.90 | 14.63 | 57.29 | 12.22 | 234.19 | 25.49 |
| Female | 167.21 | 28.19 | 45.37 | 20.84 | 212.58 | 45.90 | 174.84 | 22.18 | 56.68 | 15.84 | 231.53 | 36.68 |
| 4th Quarter | | | | | | | | | | | | |
| Total | 178.05 | 21.86 | 53.40 | 16.74 | 231.45 | 36.70 | 191.31 | 15.58 | 65.00 | 9.94 | 256.31 | 23.56 |
| Male | 178.67 | 25.83 | 51.14 | 18.45 | 229.81 | 42.83 | 190.81 | 16.95 | 63.76 | 12.10 | 254.57 | 27.11 |
| Female | 177.43 | 17.67 | 55.67 | 14.95 | 233.10 | 30.34 | 191.81 | 14.48 | 66.24 | 7.29 | 258.05 | 19.91 |

Table 4.11. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement in Language Arts for Longitudinal Cohort 1: Webster Transitional School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|------------------------|----------|------------|---------|---------|-----------|--------|---------|-----------|--------|
| <u>Parts of Speech</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 155 | 3 | 3 | 9 | 9 | 465 |
| Mean Square | 19676.44 | 50029.68 | 5446.36 | 1513.32 | 255639.07 | 787.76 | 446.11 | 450.21 | 249.18 |
| F | 13.00 | 33.06 | 3.60 | | 1025.93 | 3.16 | 1.79 | 1.81 | |
| P | <.001 | <.001 | .015 | | <.001 | .024 | .068 | .065 | |
| <u>Sentences</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 155 | 3 | 3 | 9 | 9 | 465 |
| Mean Square | 2575.28 | 11649.10 | 652.22 | 445.48 | 65794.39 | 98.71 | 604.91 | 227.78 | 112.20 |
| F | 5.78 | 26.15 | 1.46 | | 586.42 | .88 | 5.39 | 2.03 | |
| P | .017 | <.001 | .227 | | <.001 | .451 | <.001 | .035 | |
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 155 | 3 | 3 | 9 | 9 | 465 |
| Mean Square | 37596.98 | 109745.60 | 9637.21 | 3242.50 | 582098.17 | 713.54 | 1779.18 | 959.19 | 524.17 |
| F | 11.60 | 33.85 | 2.97 | | 1110.52 | 1.36 | 3.39 | 1.83 | |
| P | .001 | <.001 | .034 | | <.001 | .254 | <.001 | .061 | |

Table 4.12. Mean Mental Ability and Mean Educational Achievement in Reading and Mathematics for Longitudinal Cohort 1: Webster Transitional School

| | N | Mental Ability | | Spring, 1978 (Grade 6) | | | | Spring, 1979 (Grade 7) | | | | Spring, 1980 (Grade 8) | | | |
|-------------|-----|----------------|-------|------------------------|------|---------------|------|------------------------|------|---------------|------|------------------------|------|---------------|------|
| | | | | Vocabulary | | Comprehension | | Vocabulary | | Comprehension | | Vocabulary | | Comprehension | |
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 191 | 116.01 | 13.29 | 55.36 | 8.48 | 54.14 | 7.56 | 54.81 | 8.08 | 55.94 | 7.53 | 55.76 | 8.03 | 55.36 | 8.82 |
| Male | 95 | 116.98 | 13.38 | 55.59 | 8.07 | 54.37 | 7.68 | 55.62 | 8.58 | 55.81 | 8.16 | 55.74 | 8.31 | 55.83 | 8.88 |
| Female | 96 | 115.05 | 13.19 | 55.13 | 8.90 | 53.91 | 7.47 | 54.00 | 7.52 | 56.07 | 6.89 | 55.79 | 7.78 | 54.89 | 8.78 |
| 1st Quarter | | | | | | | | | | | | | | | |
| Total | 48 | 99.90 | 6.27 | 47.58 | 6.25 | 47.15 | 6.44 | 48.81 | 4.52 | 49.31 | 6.68 | 48.50 | 5.59 | 47.29 | 5.15 |
| Male | 22 | 100.18 | 5.92 | 47.77 | 4.89 | 46.45 | 6.90 | 49.27 | 3.99 | 47.36 | 5.92 | 47.77 | 4.55 | 47.36 | 5.55 |
| Female | 26 | 99.65 | 6.66 | 47.42 | 7.30 | 47.73 | 6.10 | 48.42 | 4.97 | 50.96 | 6.95 | 49.12 | 6.37 | 47.23 | 4.89 |
| 2nd Quarter | | | | | | | | | | | | | | | |
| Total | 48 | 111.25 | 2.10 | 54.02 | 7.26 | 52.65 | 4.99 | 52.17 | 5.92 | 54.10 | 5.31 | 54.10 | 5.71 | 53.33 | 5.85 |
| Male | 24 | 111.38 | 2.14 | 54.79 | 7.16 | 53.46 | 5.11 | 52.96 | 6.15 | 53.96 | 6.20 | 53.58 | 6.25 | 53.67 | 5.11 |
| Female | 24 | 111.13 | 2.09 | 53.25 | 7.43 | 51.83 | 4.84 | 51.38 | 5.69 | 54.25 | 4.39 | 54.63 | 5.18 | 53.00 | 6.60 |
| 3rd Quarter | | | | | | | | | | | | | | | |
| Total | 48 | 119.19 | 3.09 | 57.50 | 6.68 | 56.92 | 6.35 | 55.71 | 7.31 | 57.23 | 5.10 | 57.40 | 6.94 | 56.63 | 7.47 |
| Male | 25 | 119.88 | 2.96 | 56.88 | 6.73 | 57.80 | 6.74 | 55.28 | 7.85 | 57.48 | 5.31 | 57.40 | 7.57 | 56.80 | 7.96 |
| Female | 23 | 118.43 | 3.12 | 58.17 | 6.72 | 55.96 | 5.89 | 56.17 | 6.82 | 56.96 | 4.96 | 57.39 | 6.37 | 56.43 | 7.06 |
| 4th Quarter | | | | | | | | | | | | | | | |
| Total | 47 | 134.09 | 5.99 | 62.47 | 6.04 | 59.96 | 5.56 | 62.70 | 7.02 | 63.28 | 5.22 | 63.21 | 5.84 | 64.36 | 6.75 |
| Male | 24 | 134.96 | 6.08 | 62.21 | 6.30 | 58.96 | 5.34 | 64.46 | 7.53 | 63.67 | 5.77 | 63.46 | 5.79 | 64.75 | 6.65 |
| Female | 23 | 133.17 | 5.89 | 62.74 | 5.88 | 61.00 | 5.71 | 60.87 | 6.07 | 62.87 | 4.67 | 62.96 | 6.01 | 63.96 | 6.99 |

Table 4.12. (Continued):

| | Fall, 1977 (Grade 6) | | Fall, 1978 (Grade 7) | | Fall, 1979 (Grade 8) | | Spring, 1980 (Grade 8) | |
|-------------|----------------------|-------|----------------------|-------|----------------------|-------|------------------------|-------|
| | Math | | Math | | Math | | Math | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 46.79 | 31.01 | 105.46 | 52.81 | 162.43 | 47.32 | 208.68 | 33.22 |
| Male | 47.32 | 33.92 | 104.18 | 54.05 | 160.01 | 45.43 | 207.53 | 34.00 |
| Female | 46.26 | 28.01 | 106.73 | 51.81 | 164.82 | 49.24 | 209.81 | 32.55 |
| 1st Quarter | | | | | | | | |
| Total | 27.71 | 19.07 | 63.25 | 38.08 | 126.79 | 47.36 | 180.00 | 39.27 |
| Male | 25.14 | 19.71 | 54.55 | 30.88 | 117.27 | 37.01 | 173.45 | 41.74 |
| Female | 29.88 | 18.61 | 70.62 | 42.45 | 134.85 | 54.03 | 185.54 | 36.97 |
| 2nd Quarter | | | | | | | | |
| Total | 40.65 | 25.11 | 89.83 | 39.70 | 151.83 | 42.04 | 205.52 | 28.58 |
| Male | 39.33 | 28.05 | 91.46 | 41.30 | 152.63 | 38.24 | 206.00 | 23.28 |
| Female | 41.96 | 22.32 | 88.21 | 38.86 | 151.04 | 46.34 | 205.04 | 33.56 |
| 3rd Quarter | | | | | | | | |
| Total | 49.42 | 25.05 | 118.94 | 44.84 | 174.42 | 36.37 | 219.73 | 17.83 |
| Male | 45.88 | 24.27 | 110.88 | 41.21 | 169.40 | 31.69 | 219.32 | 16.79 |
| Female | 53.26 | 25.85 | 127.70 | 47.85 | 179.87 | 40.88 | 220.17 | 19.27 |
| 4th Quarter | | | | | | | | |
| Total | 69.85 | 36.68 | 150.77 | 44.42 | 197.40 | 30.98 | 229.89 | 19.14 |
| Male | 77.13 | 38.46 | 155.42 | 47.71 | 196.79 | 36.93 | 228.00 | 24.44 |
| Female | 62.26 | 33.89 | 145.91 | 41.20 | 198.04 | 24.07 | 231.87 | 11.56 |

Table 4.13. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement in Reading and Mathematics for Longitudi-
Cohort 1: Webster Transitional School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|----------------------|---------|------------|---------|---------|-----------|--------|---------|-----------|--------|
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 2 | 2 | 6 | 6 | 366 |
| Mean Square | 10.94 | 5255.38 | 25.12 | 87.50 | 42.24 | 38.91 | 29.80 | 21.22 | 16.40 |
| F | .13 | 60.06 | .29 | | 2.58 | 2.37 | 1.82 | 1.29 | |
| P | .724 | <.001 | .834 | | .077 | .094 | .094 | .259 | |
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 2 | 2 | 6 | 6 | 366 |
| Mean Square | .21 | 5401.78 | 45.24 | 71.25 | 160.60 | 15.46 | 58.94 | 25.71 | 17.88 |
| F | <.01 | 75.81 | .63 | | 8.98 | .86 | 3.30 | 1.44 | |
| P | .956 | <.001 | .593 | | <.001 | .422 | .004 | .199 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 183 | 3 | 3 | 9 | 9 | 549 |
| Mean Square | 3009.13 | 136723.77 | 3143.91 | 3264.26 | 936906.54 | 410.61 | 4461.35 | 503.06 | 523.66 |
| F | .92 | 41.89 | .96 | | 1789.15 | .78 | 8.52 | .96 | |
| P | .338 | <.001 | .411 | | <.001 | .503 | <.001 | .472 | |

Table 4.14. Mean Mental Ability and Mean Educational Achievement for Reading, Language Arts, and Mathematics for Longitudinal Cohort 2: Webster Transitional School

| | N | Mental Ability | | | Spring, 1979 (Grade 6) | | | | Spring, 1980 (Grade 7) | | | | Spring, 1981 (Grade 8) | | | |
|-------------|-----|----------------|-------|--|------------------------|------|---------------|------|------------------------|------|---------------|------|------------------------|------|---------------|------|
| | | \bar{X} | SD | | Vocabulary | | Comprehension | | Vocabulary | | Comprehension | | Vocabulary | | Comprehension | |
| | | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 166 | 114.31 | 11.46 | | 55.80 | 7.43 | 55.35 | 6.70 | 55.65 | 7.78 | 56.87 | 7.55 | 53.45 | 8.36 | 57.87 | 7.58 |
| Male | 76 | 116.41 | 10.41 | | 56.32 | 7.38 | 56.30 | 5.91 | 56.47 | 8.33 | 58.18 | 7.42 | 54.61 | 8.30 | 58.91 | 7.48 |
| Female | 90 | 112.54 | 11.81 | | 55.36 | 7.49 | 54.54 | 7.24 | 54.96 | 7.26 | 55.77 | 7.52 | 52.47 | 8.34 | 56.99 | 7.60 |
| 1st Quarter | | | | | | | | | | | | | | | | |
| Total | 41 | 100.44 | 4.98 | | 49.10 | 5.34 | 49.63 | 6.69 | 49.20 | 4.09 | 50.20 | 4.65 | 45.78 | 4.29 | 51.15 | 4.63 |
| Male | 14 | 102.29 | 3.32 | | 49.57 | 4.42 | 50.29 | 6.33 | 49.43 | 5.15 | 52.71 | 4.73 | 45.64 | 5.21 | 52.79 | 5.49 |
| Female | 27 | 99.48 | 5.46 | | 48.85 | 5.83 | 49.30 | 6.97 | 49.07 | 3.52 | 48.89 | 4.12 | 45.85 | 3.84 | 50.30 | 3.97 |
| 2nd Quarter | | | | | | | | | | | | | | | | |
| Total | 42 | 110.62 | 1.94 | | 53.69 | 6.49 | 54.55 | 5.89 | 53.19 | 5.53 | 54.45 | 4.86 | 50.00 | 5.53 | 56.81 | 5.96 |
| Male | 17 | 110.59 | 2.15 | | 51.76 | 7.00 | 55.00 | 4.37 | 52.59 | 5.83 | 53.08 | 4.11 | 50.29 | 3.62 | 56.76 | 4.15 |
| Female | 25 | 110.64 | 1.82 | | 55.00 | 5.89 | 54.24 | 6.81 | 53.60 | 5.40 | 54.84 | 5.36 | 49.80 | 6.60 | 56.84 | 7.02 |
| 3rd Quarter | | | | | | | | | | | | | | | | |
| Total | 41 | 116.37 | 1.96 | | 58.17 | 5.32 | 56.49 | 4.34 | 56.17 | 5.21 | 57.59 | 6.03 | 55.27 | 4.81 | 58.20 | 5.51 |
| Male | 21 | 116.24 | 1.95 | | 58.57 | 5.81 | 56.86 | 4.07 | 55.86 | 5.91 | 57.95 | 7.30 | 55.14 | 5.55 | 58.19 | 6.78 |
| Female | 20 | 116.50 | 2.01 | | 57.75 | 4.87 | 56.10 | 4.68 | 56.50 | 4.50 | 57.20 | 4.50 | 55.40 | 4.03 | 58.20 | 3.93 |
| 4th Quarter | | | | | | | | | | | | | | | | |
| Total | 42 | 129.55 | 6.97 | | 62.12 | 5.36 | 60.62 | 4.58 | 63.90 | 7.23 | 65.12 | 5.32 | 62.60 | 7.09 | 65.17 | 6.64 |
| Male | 24 | 128.92 | 7.33 | | 61.50 | 5.23 | 60.25 | 4.88 | 63.88 | 7.63 | 64.63 | 5.78 | 62.42 | 6.85 | 64.63 | 7.25 |
| Female | 18 | 130.39 | 6.58 | | 62.94 | 5.58 | 61.11 | 4.23 | 63.94 | 6.87 | 65.78 | 4.72 | 62.83 | 7.60 | 65.89 | 5.86 |

le 4.14. (Continued):

| | Fall, 1978 (Grade 6) | | | | | | Fall, 1979 (Grade 7) | | | | | |
|-------------|----------------------|-------|-----------|-------|----------------|-------|----------------------|-------|-----------|-------|----------------|-------|
| | Parts of Speech | | Sentences | | Language Total | | Parts of Speech | | Sentences | | Language Total | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 83.86 | 26.33 | 7.51 | 8.46 | 91.36 | 32.03 | 124.08 | 27.73 | 23.69 | 16.51 | 147.80 | 41.32 |
| Male | 83.38 | 25.38 | 6.45 | 7.99 | 89.83 | 30.40 | 120.72 | 29.24 | 22.96 | 16.48 | 143.67 | 42.70 |
| Female | 84.26 | 27.24 | 8.40 | 8.79 | 92.66 | 33.47 | 126.91 | 26.21 | 24.30 | 16.60 | 151.28 | 40.02 |
| 1st Quarter | | | | | | | | | | | | |
| Total | 65.49 | 22.64 | 4.71 | 7.21 | 70.20 | 26.95 | 103.73 | 22.41 | 12.90 | 10.45 | 116.78 | 28.56 |
| Male | 62.21 | 23.56 | 2.50 | 5.11 | 64.71 | 24.44 | 93.14 | 23.89 | 14.21 | 10.54 | 107.36 | 30.93 |
| Female | 67.19 | 22.41 | 5.85 | 7.94 | 73.04 | 28.18 | 109.22 | 19.90 | 12.22 | 10.53 | 121.67 | 26.53 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 83.10 | 28.96 | 6.69 | 7.47 | 89.79 | 33.95 | 122.21 | 24.40 | 20.36 | 13.50 | 142.57 | 34.54 |
| Male | 77.18 | 23.77 | 6.18 | 7.55 | 83.35 | 28.04 | 110.12 | 17.41 | 14.82 | 9.54 | 124.94 | 22.15 |
| Female | 87.12 | 31.85 | 7.04 | 7.55 | 94.16 | 37.37 | 130.44 | 25.32 | 24.12 | 14.64 | 154.56 | 36.62 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 89.12 | 21.02 | 7.88 | 9.72 | 97.00 | 28.27 | 125.85 | 22.62 | 26.02 | 14.63 | 151.88 | 35.24 |
| Male | 87.48 | 19.96 | 5.71 | 8.01 | 93.19 | 26.01 | 127.33 | 27.85 | 26.00 | 16.66 | 153.33 | 42.77 |
| Female | 90.85 | 22.46 | 10.15 | 10.99 | 101.00 | 30.62 | 124.30 | 16.00 | 26.05 | 12.59 | 150.35 | 26.15 |
| 4th Quarter | | | | | | | | | | | | |
| Total | 97.40 | 21.59 | 10.69 | 8.39 | 108.10 | 26.82 | 144.07 | 26.05 | 35.26 | 18.13 | 179.31 | 40.57 |
| Male | 96.54 | 23.44 | 9.58 | 8.81 | 106.13 | 28.94 | 138.54 | 25.76 | 31.17 | 18.53 | 169.67 | 40.24 |
| Female | 98.56 | 19.46 | 12.17 | 7.80 | 110.72 | 24.27 | 151.44 | 25.28 | 40.72 | 16.51 | 192.17 | 38.37 |

Table 4.14. (Continued):

| | Spring, 1980 (Grade 7) | | | | | | Spring, 1981 (Grade 8) | | | | | |
|-------------|------------------------|-------|-----------|-------|----------------|-------|------------------------|-------|-----------|-------|----------------|-------|
| | Parts of Speech | | Sentences | | Language Total | | Parts of Speech | | Sentences | | Language Total | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 163.29 | 25.91 | 45.86 | 19.51 | 209.15 | 43.54 | 172.39 | 22.20 | 54.75 | 14.96 | 227.25 | 36.69 |
| Male | 159.96 | 26.28 | 43.49 | 20.09 | 203.45 | 44.33 | 169.05 | 22.54 | 52.17 | 14.73 | 221.49 | 35.64 |
| Female | 166.10 | 25.40 | 47.87 | 18.89 | 213.97 | 42.52 | 175.20 | 21.63 | 56.92 | 14.89 | 232.12 | 35.19 |
| 1st Quarter | | | | | | | | | | | | |
| Total | 144.98 | 23.25 | 31.63 | 15.99 | 176.61 | 37.45 | 156.85 | 16.90 | 43.12 | 13.29 | 199.98 | 27.81 |
| Male | 141.43 | 23.03 | 32.21 | 16.43 | 173.64 | 37.38 | 156.07 | 15.48 | 39.36 | 12.31 | 195.43 | 25.80 |
| Female | 146.81 | 23.58 | 31.33 | 16.06 | 178.15 | 38.11 | 157.26 | 17.86 | 45.07 | 13.58 | 202.33 | 28.99 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 161.64 | 24.72 | 44.95 | 19.49 | 206.60 | 41.94 | 168.26 | 21.70 | 55.02 | 13.46 | 223.29 | 33.91 |
| Male | 151.82 | 23.38 | 35.82 | 22.09 | 187.65 | 43.76 | 156.06 | 20.95 | 49.12 | 11.71 | 205.18 | 30.66 |
| Female | 168.32 | 23.77 | 51.16 | 14.99 | 219.48 | 36.07 | 176.56 | 18.29 | 59.04 | 13.30 | 235.60 | 30.77 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 165.71 | 22.78 | 48.24 | 17.32 | 213.95 | 37.25 | 174.20 | 20.97 | 56.95 | 14.40 | 231.15 | 34.48 |
| Male | 161.19 | 27.41 | 44.76 | 18.86 | 205.95 | 42.69 | 168.67 | 24.73 | 53.19 | 16.80 | 221.86 | 40.80 |
| Female | 170.45 | 15.93 | 51.90 | 15.14 | 222.35 | 29.29 | 180.00 | 14.59 | 60.90 | 10.38 | 240.90 | 23.58 |
| 4th Quarter | | | | | | | | | | | | |
| Total | 180.45 | 20.28 | 58.33 | 15.56 | 238.79 | 34.06 | 189.90 | 15.10 | 63.67 | 11.11 | 254.05 | 23.45 |
| Male | 175.46 | 20.22 | 54.38 | 16.40 | 229.83 | 35.27 | 186.17 | 12.31 | 60.92 | 9.67 | 247.92 | 18.07 |
| Female | 187.11 | 18.89 | 63.61 | 12.96 | 250.72 | 29.17 | 194.89 | 17.29 | 67.33 | 12.09 | 262.22 | 27.59 |

Table 4.14. (Continued):

| | Fall, 1978 (Grade 6) | | Fall, 1979 (Grade 7) | | Fall, 1980 (Grade 8) | | Spring, 1981 (Grade 8) | |
|-------------|----------------------|-------|----------------------|-------|----------------------|-------|------------------------|-------|
| | Math | | Math | | Math | | Math | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 44.48 | 26.84 | 119.84 | 48.77 | 170.12 | 43.27 | 215.08 | 27.61 |
| Male | 41.43 | 24.61 | 120.24 | 46.11 | 171.49 | 40.69 | 216.62 | 26.11 |
| Female | 47.06 | 28.47 | 119.51 | 51.17 | 168.97 | 45.54 | 213.79 | 28.90 |
| 1st Quarter | | | | | | | | |
| Total | 27.46 | 17.00 | 85.37 | 37.62 | 144.49 | 38.30 | 198.24 | 26.12 |
| Male | 25.07 | 13.53 | 90.21 | 22.43 | 155.71 | 34.84 | 207.00 | 24.25 |
| Female | 28.70 | 18.66 | 82.85 | 43.67 | 138.67 | 39.33 | 193.70 | 26.33 |
| 2nd Quarter | | | | | | | | |
| Total | 42.88 | 26.28 | 113.62 | 44.48 | 164.45 | 44.07 | 214.31 | 26.83 |
| Male | 37.53 | 24.68 | 101.76 | 36.61 | 157.88 | 38.49 | 208.65 | 23.76 |
| Female | 46.52 | 27.20 | 121.68 | 48.15 | 168.92 | 47.73 | 218.16 | 28.55 |
| 3rd Quarter | | | | | | | | |
| Total | 47.20 | 25.53 | 132.10 | 43.69 | 175.93 | 37.13 | 216.54 | 28.98 |
| Male | 39.86 | 20.89 | 130.48 | 45.51 | 170.24 | 41.65 | 214.00 | 32.45 |
| Female | 54.90 | 28.12 | 133.80 | 42.82 | 181.90 | 31.66 | 219.20 | 25.39 |
| 4th Quarter | | | | | | | | |
| Total | 60.05 | 27.25 | 147.76 | 46.64 | 195.14 | 38.12 | 230.88 | 17.93 |
| Male | 55.13 | 26.38 | 141.88 | 50.30 | 191.42 | 38.32 | 230.17 | 16.77 |
| Female | 66.61 | 27.74 | 155.61 | 41.34 | 200.11 | 38.38 | 231.83 | 19.82 |

Table 4.15. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 2: Webster Transitional School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|------------------------|----------|------------|---------|---------|-----------|--------|---------|-----------|--------|
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 2 | 2 | 6 | 6 | 316 |
| Mean Square | 19.88 | 4768.78 | 13.72 | 61.05 | 270.17 | 4.83 | 48.94 | 14.50 | 17.42 |
| F | .33 | 78.11 | .22 | | 15.51 | .28 | 2.81 | .83 | |
| P | .569 | <.001 | .879 | | <.001 | .758 | .011 | .545 | |
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 2 | 2 | 6 | 6 | 316 |
| Mean Square | 22.88 | 3441.53 | 63.62 | 52.30 | 265.26 | 1.12 | 48.29 | 9.17 | 19.27 |
| F | .44 | 65.81 | 1.22 | | 13.76 | .06 | 2.51 | .48 | |
| P | .510 | <.001 | .305 | | <.001 | .943 | .022 | .826 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 3 | 3 | 9 | 9 | 474 |
| Mean Square | 4618.80 | 52818.34 | 3356.25 | 3443.67 | 857135.86 | 636.40 | 1854.87 | 331.83 | 405.09 |
| F | 1.34 | 15.34 | .97 | | 2115.91 | 1.57 | 4.58 | .82 | |
| P | .249 | <.001 | .406 | | <.001 | .196 | <.001 | .599 | |
| <u>Parts of Speech</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 3 | 3 | 9 | 9 | 474 |
| Mean Square | 14196.32 | 36542.76 | 1059.76 | 1215.68 | 262376.60 | 346.86 | 306.50 | 314.68 | 238.31 |
| F | 11.68 | 30.06 | .87 | | 1100.97 | 1.46 | 1.29 | 1.32 | |
| P | .001 | <.001 | .457 | | <.001 | .226 | .242 | .223 | |
| <u>Sentences</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 3 | 3 | 9 | 9 | 474 |
| Mean Square | 4895.62 | 10422.80 | 377.32 | 412.84 | 72089.18 | 232.04 | 592.44 | 157.62 | 98.96 |
| F | 11.86 | 25.25 | .91 | | 728.44 | 2.34 | 5.99 | 1.59 | |
| P | .001 | <.001 | .435 | | <.001 | .072 | <.001 | .115 | |
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 158 | 3 | 3 | 9 | 9 | 474 |
| Mean Square | 35595.63 | 86204.72 | 2390.41 | 2785.53 | 608226.19 | 929.66 | 1106.42 | 623.46 | 472.22 |
| F | 12.78 | 30.95 | .86 | | 1288.01 | 1.97 | 2.34 | 1.32 | |
| P | <.001 | <.001 | .464 | | <.001 | .118 | .014 | .224 | |

Table 4.16. Adjusted Means in Educational Achievement for Longitudinal Cohort 1 and Cohort 2: Webster Transitional School

| | Parts of Speech | | Sentences | Language Total | Math | | Vocabulary | Comprehension |
|----------|-----------------|-----------|-----------|----------------|------|-----------|------------|---------------|
| | N | \bar{X} | \bar{X} | \bar{X} | N | \bar{X} | \bar{X} | \bar{X} |
| Cohort 1 | 163 | 133.67 | 31.75 | 165.19 | 191 | 129.44 | 54.95 | 54.81 |
| | 80 | 127.95 | 29.61 | 157.22 | 95 | 126.65 | 54.85 | 54.59 |
| | 83 | 139.18 | 33.80 | 172.87 | 96 | 132.21 | 55.05 | 55.03 |
| Cohort 2 | 166 | 137.43 | 33.72 | 171.19 | 166 | 138.99 | 55.37 | 57.08 |
| | 76 | 132.31 | 30.78 | 163.14 | 76 | 135.35 | 55.26 | 57.29 |
| | 90 | 141.76 | 36.20 | 177.98 | 90 | 142.06 | 55.47 | 56.91 |

Table 4.17. Tests of Significance (ANCOVA) of Differences in Educational Achievement and Comparison of Gains for Longitudinal Cohort 1 and Cohort 2: Webster Transitional School

| Source | Sex(S) | Cohort(C) | C X S | Gain(G) | G X S | G X C | G X S X C | Error |
|------------------------|----------|-----------|--------|------------|--------|---------|-----------|--------|
| <u>Parts of Speech</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 975 |
| Mean Square | 34629.62 | 3903.08 | 254.88 | 526586.66 | 369.14 | 52.13 | 668.38 | 248.08 |
| F | 26.65 | 3.00 | .20 | 2122.61 | 1.49 | .21 | 2.69 | |
| P | <.001 | .084 | .658 | <.001 | .216 | .889 | .045 | |
| <u>Sentences</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 975 |
| Mean Square | 7483.29 | 1030.35 | 122.81 | 141502.50 | 128.42 | 233.50 | 60.22 | 116.81 |
| F | 18.12 | 2.50 | .30 | 1211.35 | 1.10 | 2.00 | .52 | |
| P | <.001 | .115 | .586 | <.001 | .348 | .113 | .672 | |
| <u>Language Total</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 975 |
| Mean Square | 75294.75 | 9896.22 | 53.80 | 1214153.05 | 276.17 | 356.46 | 994.01 | 521.18 |
| F | 26.29 | 3.45 | .02 | 2329.60 | .53 | .68 | 1.91 | |
| P | <.001 | .064 | .891 | <.001 | .662 | .562 | .127 | |
| <u>Math</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 1059 |
| Mean Square | 13137.89 | 30332.55 | 119.05 | 1817013.56 | 97.05 | 4311.87 | 846.26 | 514.16 |
| F | 4.34 | 10.02 | .04 | 3533.96 | .19 | 8.39 | 1.65 | |
| P | .038 | .002 | .843 | <.001 | .904 | <.001 | .177 | |
| <u>Vocabulary</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 706 |
| Mean Square | 10.50 | 45.24 | .01 | 81.52 | 16.54 | 255.38 | 31.38 | 17.29 |
| F | .16 | .69 | <.01 | 4.71 | .96 | 14.77 | 1.81 | |
| P | .688 | .405 | .990 | .009 | .385 | <.001 | .164 | |
| <u>Comprehension</u> | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 706 |
| Mean Square | .206 | 1390.36 | 44.94 | 375.26 | 3.41 | 61.71 | 18.19 | 19.13 |
| F | <.01 | 25.87 | .84 | 19.62 | .18 | 3.23 | .95 | |
| P | .95 | <.001 | .361 | <.001 | .837 | .040 | .387 | |

Table 5.1. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 7 Classes: Carl Sandburg Junior High School

| | 1977-1978 | | | | | | 1978-1979 | | | | | | 1979-1980 | | | | | |
|----------------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| Word Knowledge | | | | | | | | | | | | | | | | | | |
| Total | 176 | 105.39 | 12.61 | 176 | 91.10 | 11.73 | 151 | 106.42 | 12.52 | 151 | 90.93 | 12.20 | 156 | 109.22 | 13.24 | 156 | 93.92 | 11.29 |
| Male | 99 | 105.29 | 12.76 | 99 | 91.42 | 12.12 | 79 | 105.34 | 13.62 | 79 | 89.84 | 12.47 | 78 | 110.21 | 12.05 | 78 | 94.28 | 11.50 |
| Female | 77 | 105.51 | 12.51 | 77 | 90.68 | 11.28 | 72 | 107.61 | 11.16 | 72 | 92.14 | 11.87 | 78 | 108.24 | 14.35 | 78 | 93.56 | 11.14 |
| Reading | | | | | | | | | | | | | | | | | | |
| Total | 176 | 105.39 | 12.61 | 176 | 90.52 | 13.75 | 151 | 106.42 | 12.52 | 151 | 90.66 | 16.47 | 156 | 109.22 | 13.24 | 156 | 94.11 | 14.23 |
| Male | 99 | 105.29 | 12.76 | 99 | 90.26 | 14.88 | 79 | 105.34 | 13.62 | 79 | 90.01 | 16.31 | 78 | 110.21 | 12.05 | 78 | 92.15 | 14.80 |
| Female | 77 | 105.51 | 12.51 | 77 | 90.84 | 12.25 | 72 | 107.61 | 11.16 | 72 | 91.38 | 16.73 | 78 | 108.24 | 14.35 | 78 | 96.06 | 13.45 |
| Reading Total | | | | | | | | | | | | | | | | | | |
| Total | 176 | 105.39 | 12.61 | 176 | 91.68 | 12.96 | 151 | 106.42 | 12.52 | 151 | 91.93 | 14.62 | 156 | 109.22 | 13.24 | 156 | 95.23 | 12.89 |
| Male | 99 | 105.29 | 12.76 | 99 | 91.70 | 13.52 | 79 | 105.34 | 13.62 | 79 | 90.92 | 14.58 | 78 | 110.21 | 12.05 | 78 | 94.41 | 13.07 |
| Female | 77 | 105.51 | 12.51 | 77 | 91.65 | 12.30 | 72 | 107.61 | 11.16 | 72 | 93.03 | 14.69 | 78 | 108.24 | 14.35 | 78 | 96.05 | 12.73 |
| Language | | | | | | | | | | | | | | | | | | |
| Total | 176 | 105.39 | 12.61 | 176 | 95.62 | 13.35 | 150 | 106.47 | 12.55 | 150 | 96.35 | 15.30 | 155 | 109.21 | 13.28 | 155 | 101.01 | 13.25 |
| Male | 99 | 105.29 | 12.76 | 99 | 93.22 | 13.33 | 78 | 105.41 | 13.70 | 78 | 94.00 | 15.12 | 78 | 110.21 | 12.05 | 78 | 98.50 | 13.85 |
| Female | 77 | 105.51 | 12.51 | 77 | 98.70 | 12.82 | 72 | 107.61 | 11.16 | 72 | 98.89 | 15.20 | 77 | 108.21 | 14.44 | 77 | 103.56 | 12.18 |
| Spelling | | | | | | | | | | | | | | | | | | |
| Total | 172 | 105.74 | 12.38 | 172 | 94.26 | 12.55 | 149 | 106.40 | 12.56 | 149 | 94.77 | 14.46 | 158 | 109.24 | 13.17 | 158 | 99.87 | 13.25 |
| Male | 96 | 105.73 | 12.42 | 96 | 92.49 | 12.74 | 78 | 105.35 | 13.72 | 78 | 91.87 | 14.74 | 79 | 110.14 | 11.98 | 79 | 98.67 | 12.73 |
| Female | 76 | 105.75 | 12.41 | 76 | 96.50 | 12.01 | 71 | 107.56 | 11.13 | 71 | 97.94 | 13.54 | 79 | 108.34 | 14.28 | 79 | 101.06 | 13.74 |
| Math | | | | | | | | | | | | | | | | | | |
| Computation | | | | | | | | | | | | | | | | | | |
| Total | 172 | 105.74 | 12.38 | 172 | 94.47 | 12.14 | 149 | 106.40 | 12.56 | 149 | 96.25 | 12.17 | 158 | 109.24 | 13.17 | 158 | 101.10 | 12.13 |
| Male | 96 | 105.73 | 12.42 | 96 | 93.41 | 12.24 | 78 | 105.35 | 13.72 | 78 | 94.85 | 12.98 | 79 | 110.14 | 11.98 | 79 | 99.76 | 13.53 |
| Female | 76 | 105.75 | 12.41 | 76 | 95.82 | 11.96 | 71 | 107.56 | 11.13 | 71 | 97.79 | 11.09 | 79 | 108.34 | 14.28 | 79 | 102.44 | 10.45 |

Table S.1. (Continued):

| | 1977-1978 | | | | | | 1978-1979 | | | | | | 1979-1980 | | | | | |
|----------------------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|----------------|-----------|-------|-------------|-----------|-------|
| | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | | Mental Ability | | | Achievement | | |
| | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD | N | \bar{X} | SD |
| Math Concepts | | | | | | | | | | | | | | | | | | |
| Total | 172 | 105.74 | 12.38 | 172 | 87.67 | 11.63 | 149 | 106.40 | 12.56 | 149 | 89.97 | 12.56 | 158 | 109.24 | 13.17 | 158 | 92.76 | 11.79 |
| Male | 96 | 105.73 | 12.42 | 96 | 87.35 | 12.15 | 78 | 105.35 | 13.72 | 78 | 88.38 | 13.00 | 79 | 110.14 | 11.98 | 79 | 92.42 | 12.86 |
| Female | 76 | 105.75 | 12.41 | 76 | 88.07 | 11.01 | 71 | 107.56 | 11.13 | 71 | 91.72 | 11.90 | 79 | 108.34 | 14.28 | 79 | 93.10 | 10.69 |
| Math Problem Solving | | | | | | | | | | | | | | | | | | |
| Total | 172 | 105.74 | 12.38 | 172 | 94.54 | 12.51 | 149 | 106.40 | 12.56 | 149 | 95.19 | 14.00 | 158 | 109.24 | 13.17 | 158 | 99.51 | 12.87 |
| Male | 96 | 105.73 | 12.42 | 96 | 94.20 | 12.59 | 78 | 105.35 | 13.72 | 78 | 93.64 | 14.69 | 79 | 110.14 | 11.98 | 79 | 99.48 | 13.21 |
| Female | 76 | 105.75 | 12.41 | 76 | 94.97 | 12.49 | 71 | 107.56 | 11.13 | 71 | 96.90 | 13.09 | 79 | 108.34 | 14.28 | 79 | 99.53 | 12.61 |
| Math Total | | | | | | | | | | | | | | | | | | |
| Total | 172 | 105.74 | 12.38 | 172 | 97.26 | 11.90 | 149 | 106.40 | 12.56 | 149 | 98.83 | 12.53 | 158 | 109.24 | 13.17 | 158 | 103.23 | 11.87 |
| Male | 96 | 105.73 | 12.42 | 96 | 96.60 | 12.10 | 78 | 105.35 | 13.72 | 78 | 97.28 | 13.28 | 79 | 110.14 | 11.98 | 79 | 102.63 | 12.89 |
| Female | 76 | 105.75 | 12.41 | 76 | 98.08 | 11.68 | 71 | 107.56 | 11.13 | 71 | 100.52 | 11.52 | 79 | 108.34 | 14.28 | 79 | 103.84 | 10.80 |
| Science | | | | | | | | | | | | | | | | | | |
| Total | 177 | 105.49 | 12.52 | 177 | 95.75 | 10.27 | 151 | 106.46 | 12.48 | 151 | 95.01 | 10.90 | 157 | 109.32 | 13.17 | 157 | 97.82 | 10.82 |
| Male | 100 | 105.32 | 12.61 | 100 | 97.25 | 10.81 | 80 | 105.26 | 13.56 | 80 | 95.35 | 11.48 | 78 | 110.32 | 11.95 | 78 | 98.41 | 12.02 |
| Female | 77 | 105.71 | 12.48 | 77 | 93.79 | 9.23 | 71 | 107.82 | 11.09 | 71 | 94.62 | 10.26 | 79 | 108.34 | 14.28 | 79 | 97.23 | 9.54 |
| Social Studies | | | | | | | | | | | | | | | | | | |
| Total | 178 | 105.43 | 12.51 | 178 | 93.25 | 11.16 | 152 | 106.36 | 12.50 | 152 | 94.72 | 12.97 | 157 | 109.32 | 13.17 | 157 | 97.23 | 12.55 |
| Male | 100 | 105.32 | 12.61 | 100 | 93.48 | 12.02 | 80 | 105.26 | 13.56 | 80 | 94.71 | 14.20 | 78 | 110.32 | 11.95 | 78 | 97.37 | 13.85 |
| Female | 78 | 105.58 | 12.46 | 78 | 92.96 | 10.03 | 72 | 107.58 | 11.19 | 72 | 94.74 | 11.56 | 79 | 108.34 | 14.28 | 79 | 97.09 | 11.22 |

Table 5.2. Adjusted Means in Educational Achievement for Three Successive Grade 7 Classes: Carl Sandburg Junior High School

| | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | | Math Computation | |
|---------------|----------------|-----------|----------------------|-----------|---------------|-----------|----------|-----------|----------------|-----------|------------------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| | | | | | | | | | | | | |
| 1977-78 Total | 176 | 92.16 | 176 | 91.88 | 176 | 92.96 | 176 | 94.76 | 172 | 95.11 | 172 | 95.31 |
| Male | 99 | 92.55 | 99 | 91.71 | 99 | 93.06 | 99 | 92.44 | 96 | 93.34 | 96 | 94.25 |
| Female | 77 | 91.66 | 77 | 92.10 | 77 | 92.84 | 77 | 97.75 | 76 | 97.34 | 76 | 96.64 |
| 1978-79 Total | 151 | 91.29 | 151 | 91.12 | 151 | 92.36 | 150 | 94.62 | 149 | 95.20 | 149 | 96.68 |
| Male | 79 | 90.93 | 79 | 91.42 | 79 | 92.25 | 78 | 93.12 | 78 | 92.96 | 78 | 95.92 |
| Female | 72 | 91.69 | 72 | 90.80 | 72 | 92.48 | 72 | 96.25 | 71 | 97.66 | 71 | 97.50 |
| 1979-80 Total | 156 | 92.38 | 156 | 92.13 | 156 | 93.36 | 155 | 97.09 | 158 | 98.54 | 158 | 99.79 |
| Male | 78 | 92.07 | 78 | 89.32 | 78 | 91.73 | 78 | 93.78 | 79 | 96.79 | 79 | 97.89 |
| Female | 78 | 92.68 | 78 | 94.94 | 78 | 94.99 | 77 | 100.44 | 79 | 100.29 | 79 | 101.68 |
| | | | | | | | | | | | | |
| | Math Concepts | | Math Problem Solving | | Math Total | | Science | | Social Studies | | | |
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | | |
| | | | | | | | | | | | | |
| 1977-78 Total | 172 | 88.58 | 172 | 95.56 | 172 | 98.22 | 177 | 96.70 | 178 | 94.37 | | |
| Male | 96 | 88.27 | 96 | 95.22 | 96 | 97.57 | 100 | 98.31 | 100 | 94.68 | | |
| Female | 76 | 88.97 | 76 | 95.98 | 76 | 99.03 | 77 | 94.61 | 78 | 93.97 | | |
| 1978-79 Total | 149 | 90.44 | 149 | 95.72 | 149 | 99.32 | 151 | 95.36 | 152 | 95.17 | | |
| Male | 78 | 89.56 | 78 | 94.95 | 78 | 98.52 | 80 | 96.45 | 80 | 95.95 | | |
| Female | 71 | 91.41 | 71 | 96.56 | 71 | 100.19 | 71 | 94.14 | 72 | 94.30 | | |
| 1979-80 Total | 158 | 91.33 | 158 | 97.91 | 158 | 101.72 | 157 | 96.40 | 157 | 95.54 | | |
| Male | 79 | 90.39 | 79 | 97.21 | 79 | 100.48 | 78 | 96.37 | 78 | 94.96 | | |
| Female | 79 | 92.27 | 79 | 98.60 | 79 | 102.96 | 79 | 96.42 | 79 | 96.10 | | |

Table 5.3. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Successive Grade 7 Classes:
Carl Sandburg Junior High School

| Source | Covariate | Class(C) | Sex(S) | C X S | Residual | Total |
|-----------------------|-----------|----------|---------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 476 | 482 |
| Mean Square | 36116.94 | 47.07 | 3.09 | 34.79 | 62.67 | 139.17 |
| F | 576.35 | .75 | .05 | .56 | | |
| P | <.001 | .472 | .824 | .574 | | |
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 476 | 482 |
| Mean Square | 59413.62 | 44.06 | 387.31 | 435.51 | 94.77 | 220.99 |
| F | 626.96 | .47 | 4.09 | 4.59 | | |
| P | <.001 | .628 | .044 | .011 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 476 | 482 |
| Mean Square | 52910.69 | 38.00 | 141.89 | 141.94 | 71.50 | 183.55 |
| F | 739.97 | .53 | 1.98 | 1.99 | | |
| P | <.001 | .588 | .160 | .139 | | |
| <u>Language</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 474 | 480 |
| Mean Square | 50199.00 | 258.14 | 3012.58 | 120.46 | 83.83 | 199.69 |
| F | 598.82 | 3.08 | 35.94 | 1.43 | | |
| P | <.001 | .047 | <.001 | .239 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 472 | 478 |
| Mean Square | 29425.41 | 538.35 | 1964.08 | 13.59 | 113.81 | 185.14 |
| F | 258.56 | 4.73 | 17.26 | .12 | | |
| P | <.001 | .009 | <.001 | .887 | | |

Table 5.3. (Continued):

| Source | Covariate | Class (C) | Sex (S) | C X S | Residual | Total |
|-----------------------------|-----------|-----------|---------|--------|----------|--------|
| <u>Math Computation</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 472 | 478 |
| Mean Square | 28822.50 | 794.44 | 795.51 | 47.80 | 85.84 | 154.84 |
| F | 335.76 | 9.26 | 9.27 | .56 | | |
| P | <.001 | <.001 | .002 | .573 | | |
| <u>Math Concepts</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 472 | 478 |
| Mean Square | 34153.26 | 312.93 | 259.43 | 18.74 | 71.37 | 147.34 |
| F | 478.54 | 4.39 | 3.64 | .26 | | |
| P | <.001 | .013 | .057 | .769 | | |
| <u>Math Problem Solving</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 472 | 478 |
| Mean Square | 42629.04 | 261.20 | 186.30 | 7.81 | 82.10 | 176.02 |
| F | 519.23 | 3.18 | 2.27 | .10 | | |
| P | <.001 | .042 | .133 | .909 | | |
| <u>Math Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 472 | 478 |
| Mean Square | 38379.89 | 487.39 | 414.36 | 11.54 | 64.98 | 152.10 |
| F | 590.63 | 7.50 | 6.38 | .19 | | |
| P | <.001 | .001 | .012 | .837 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 478 | 484 |
| Mean Square | 29840.83 | 67.20 | 475.11 | 146.46 | 50.65 | 114.27 |
| F | 589.22 | 1.33 | 9.38 | 2.89 | | |
| P | <.001 | .266 | .002 | .056 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 480 | 486 |
| Mean Square | 40612.56 | 62.35 | 19.61 | 78.12 | 65.48 | 151.01 |
| F | 620.23 | .95 | .30 | 1.19 | | |
| P | <.001 | .387 | .584 | .304 | | |

Table 5.4. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 8 Classes: Carl Sandburg Junior High School

| | 1977-1978 | | | | | 1978-1979 | | | | | 1979-1980 | | | | |
|----------------|----------------|-----------|-------|-------------|-------|----------------|-----------|-------|-------------|-------|----------------|-----------|-------|-------------|-------|
| | Mental Ability | | | Achievement | | Mental Ability | | | Achievement | | Mental Ability | | | Achievement | |
| | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD |
| Word Knowledge | | | | | | | | | | | | | | | |
| Total | 186 | 105.40 | 14.39 | 96.93 | 12.81 | 164 | 106.02 | 12.01 | 96.42 | 13.94 | 157 | 105.15 | 13.30 | 95.32 | 13.43 |
| Male | 103 | 105.20 | 13.46 | 97.68 | 12.80 | 90 | 105.81 | 11.89 | 96.77 | 12.51 | 85 | 103.95 | 15.15 | 93.27 | 13.34 |
| Female | 83 | 105.65 | 15.55 | 96.00 | 12.85 | 74 | 106.23 | 12.24 | 96.00 | 15.57 | 72 | 106.56 | 10.65 | 97.75 | 13.23 |
| Reading | | | | | | | | | | | | | | | |
| Total | 187 | 105.32 | 14.40 | 95.55 | 15.19 | 164 | 105.96 | 12.02 | 95.99 | 16.02 | 157 | 105.15 | 13.30 | 97.03 | 16.30 |
| Male | 104 | 105.06 | 13.48 | 94.39 | 15.51 | 91 | 105.74 | 11.84 | 95.73 | 16.85 | 85 | 103.95 | 15.15 | 95.35 | 17.24 |
| Female | 83 | 105.65 | 15.55 | 96.99 | 14.73 | 73 | 106.25 | 12.32 | 96.32 | 15.04 | 72 | 106.56 | 10.66 | 99.01 | 15.00 |
| Reading Total | | | | | | | | | | | | | | | |
| Total | 186 | 105.40 | 14.39 | 97.87 | 14.10 | 163 | 106.01 | 12.04 | 97.79 | 15.09 | 157 | 105.15 | 13.30 | 97.43 | 15.24 |
| Male | 103 | 105.20 | 13.46 | 97.85 | 14.13 | 90 | 105.81 | 11.89 | 97.81 | 14.49 | 85 | 103.95 | 15.15 | 95.36 | 15.78 |
| Female | 83 | 105.65 | 15.55 | 97.88 | 14.15 | 73 | 106.25 | 12.32 | 97.75 | 15.91 | 72 | 106.56 | 10.65 | 99.88 | 14.40 |
| Language | | | | | | | | | | | | | | | |
| Total | 186 | 105.40 | 14.39 | 100.70 | 14.47 | 162 | 106.01 | 12.08 | 99.57 | 13.55 | 157 | 105.15 | 13.31 | 97.20 | 14.38 |
| Male | 103 | 105.20 | 13.46 | 99.46 | 14.32 | 90 | 105.81 | 11.89 | 97.52 | 14.80 | 85 | 103.95 | 15.15 | 96.15 | 14.78 |
| Female | 83 | 105.65 | 15.55 | 102.25 | 14.59 | 72 | 106.25 | 12.40 | 102.13 | 11.40 | 72 | 106.56 | 10.65 | 102.81 | 13.09 |
| Spelling | | | | | | | | | | | | | | | |
| Total | 188 | 105.31 | 14.33 | 99.73 | 12.64 | 165 | 106.21 | 11.98 | 98.50 | 12.55 | 160 | 105.10 | 13.33 | 98.89 | 12.77 |
| Male | 106 | 104.84 | 13.46 | 96.86 | 12.66 | 92 | 105.75 | 11.78 | 96.04 | 12.14 | 87 | 103.90 | 15.19 | 95.46 | 12.62 |
| Female | 82 | 105.93 | 15.44 | 103.45 | 11.68 | 73 | 106.78 | 12.28 | 101.59 | 12.45 | 73 | 106.64 | 10.61 | 102.99 | 11.78 |
| Math | | | | | | | | | | | | | | | |
| Computation | | | | | | | | | | | | | | | |
| Total | 188 | 105.31 | 14.33 | 98.63 | 13.75 | 165 | 106.21 | 11.98 | 99.62 | 11.80 | 160 | 105.10 | 13.33 | 101.46 | 11.63 |
| Male | 106 | 104.84 | 13.46 | 97.90 | 13.90 | 92 | 105.75 | 11.78 | 97.12 | 11.01 | 87 | 103.80 | 15.19 | 99.97 | 12.52 |
| Female | 82 | 105.93 | 15.44 | 99.59 | 13.58 | 73 | 106.78 | 12.28 | 100.51 | 12.56 | 73 | 106.64 | 10.61 | 103.25 | 10.26 |

Table 5.4. (Continued):

| | 1977-1978 | | | | | 1978-1979 | | | | | 1979-1980 | | | | |
|----------------------|----------------|-----------|-------|-------------|-------|----------------|-----------|-------|-------------|-------|----------------|-----------|-------|-------------|-------|
| | Mental Ability | | | Achievement | | Mental Ability | | | Achievement | | Mental Ability | | | Achievement | |
| | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD | N | \bar{X} | SD | \bar{X} | SD |
| Math Concepts | | | | | | | | | | | | | | | |
| Total | 188 | 105.31 | 14.33 | 91.16 | 13.12 | 165 | 106.21 | 11.98 | 90.84 | 11.77 | 160 | 105.10 | 13.33 | 93.14 | 12.16 |
| Male | 106 | 104.84 | 13.46 | 90.71 | 13.64 | 92 | 105.75 | 11.78 | 90.54 | 12.33 | 87 | 103.80 | 15.19 | 92.18 | 13.14 |
| Female | 82 | 105.93 | 15.44 | 91.74 | 12.46 | 73 | 106.78 | 12.28 | 91.22 | 11.10 | 73 | 106.64 | 10.61 | 94.29 | 10.86 |
| Math Problem Solving | | | | | | | | | | | | | | | |
| Total | 188 | 105.31 | 14.33 | 98.96 | 14.74 | 165 | 106.21 | 11.98 | 97.11 | 13.46 | 160 | 105.10 | 13.33 | 100.09 | 12.55 |
| Male | 106 | 104.84 | 13.46 | 98.59 | 15.23 | 92 | 105.75 | 11.78 | 96.67 | 13.33 | 87 | 103.80 | 15.20 | 99.20 | 12.69 |
| Female | 82 | 105.93 | 15.44 | 99.44 | 14.17 | 73 | 106.78 | 12.28 | 97.66 | 13.70 | 73 | 106.64 | 10.61 | 101.15 | 12.37 |
| Math Total | | | | | | | | | | | | | | | |
| Total | 188 | 105.31 | 14.33 | 101.52 | 14.08 | 165 | 106.21 | 11.98 | 100.61 | 12.31 | 160 | 105.10 | 13.33 | 103.68 | 12.01 |
| Male | 106 | 104.84 | 13.46 | 100.85 | 14.41 | 92 | 105.75 | 11.78 | 99.73 | 12.26 | 87 | 103.80 | 15.19 | 102.40 | 12.73 |
| Female | 82 | 105.93 | 15.44 | 102.39 | 13.68 | 73 | 106.78 | 12.28 | 101.73 | 12.38 | 73 | 106.64 | 10.61 | 105.19 | 10.99 |
| Science | | | | | | | | | | | | | | | |
| Total | 184 | 105.24 | 14.42 | 98.45 | 11.73 | 165 | 106.65 | 11.11 | 99.49 | 12.09 | 159 | 105.21 | 13.31 | 98.46 | 11.12 |
| Male | 102 | 104.96 | 13.50 | 99.75 | 12.10 | 93 | 105.83 | 11.74 | 100.68 | 13.23 | 86 | 103.99 | 15.18 | 99.50 | 12.01 |
| Female | 82 | 105.60 | 15.58 | 96.84 | 11.12 | 72 | 107.72 | 10.21 | 97.96 | 10.33 | 73 | 106.64 | 10.61 | 97.23 | 9.91 |
| Social Studies | | | | | | | | | | | | | | | |
| Total | 184 | 105.24 | 14.42 | 99.76 | 14.07 | 165 | 106.65 | 11.11 | 97.70 | 12.50 | 159 | 105.21 | 13.31 | 97.63 | 14.63 |
| Male | 102 | 104.96 | 13.50 | 100.55 | 14.37 | 93 | 105.83 | 11.74 | 97.56 | 13.40 | 86 | 103.99 | 15.18 | 96.76 | 15.38 |
| Female | 82 | 105.60 | 15.58 | 98.78 | 13.76 | 72 | 107.72 | 10.21 | 97.88 | 11.32 | 73 | 106.64 | 10.61 | 98.66 | 13.73 |

Table 5.5. Adjusted Means In Educational Achievement for Three Successive Grade 8 Classes: Carl Sandburg Junior High School

| | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | | Math Computation | |
|---------------|----------------|-----------|----------------------|-----------|---------------|-----------|----------|-----------|----------------|-----------|------------------|-----------|
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} |
| 1977-78 Total | 186 | 97.02 | 187 | 95.86 | 186 | 97.96 | 186 | 100.80 | 188 | 99.86 | 186 | 98.77 |
| Male | 103 | 97.91 | 104 | 94.93 | 103 | 98.12 | 103 | 99.71 | 106 | 97.26 | 106 | 98.34 |
| Female | 83 | 95.91 | 83 | 97.02 | 83 | 97.77 | 83 | 102.14 | 82 | 103.23 | 82 | 99.33 |
| 1978-79 Total | 164 | 96.06 | 164 | 95.75 | 163 | 97.37 | 162 | 99.17 | 165 | 98.11 | 165 | 98.19 |
| Male | 90 | 96.56 | 91 | 95.68 | 90 | 97.56 | 90 | 97.28 | 92 | 95.92 | 92 | 96.98 |
| Female | 74 | 95.45 | 73 | 95.83 | 73 | 97.13 | 72 | 101.53 | 73 | 100.88 | 73 | 99.71 |
| 1979-80 Total | 157 | 95.60 | 157 | 97.49 | 157 | 97.75 | 157 | 99.51 | 160 | 99.14 | 160 | 101.74 |
| Male | 85 | 94.41 | 85 | 96.84 | 85 | 96.69 | 85 | 97.43 | 87 | 96.45 | 87 | 101.08 |
| Female | 72 | 97.00 | 72 | 98.26 | 72 | 98.99 | 72 | 101.96 | 73 | 102.35 | 73 | 102.53 |
| | Math Concepts | | Math Problem Solving | | Math Total | | Science | | Social Studies | | | |
| | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | N | \bar{X} | | |
| 1977-78 Total | 188 | 91.31 | 188 | 99.13 | 188 | 101.68 | 184 | 98.75 | 184 | 100.11 | | |
| Male | 106 | 91.18 | 106 | 99.11 | 106 | 101.36 | 102 | 100.23 | 102 | 101.13 | | |
| Female | 82 | 91.48 | 82 | 99.15 | 82 | 102.10 | 82 | 96.90 | 82 | 98.85 | | |
| 1978-79 Total | 165 | 90.39 | 165 | 96.01 | 165 | 100.12 | 165 | 98.85 | 165 | 96.93 | | |
| Male | 92 | 90.40 | 92 | 96.51 | 92 | 99.57 | 93 | 100.59 | 93 | 97.45 | | |
| Female | 73 | 90.37 | 73 | 96.73 | 73 | 100.81 | 72 | 96.61 | 72 | 96.26 | | |
| 1979-80 Total | 160 | 93.44 | 160 | 100.41 | 160 | 103.99 | 159 | 98.78 | 159 | 98.01 | | |
| Male | 87 | 93.36 | 87 | 100.48 | 87 | 103.67 | 86 | 100.63 | 86 | 98.11 | | |
| Female | 73 | 93.53 | 73 | 100.33 | 73 | 104.38 | 73 | 96.60 | 73 | 97.90 | | |

Table 5.6. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Successive Grade 8 Classes:
Carl Sandburg Junior High School

| Source | Covariate | Class(C) | Sex(S) | C X S | Residual | Total |
|-----------------------|-----------|----------|---------|--------|----------|--------|
| <u>Word Knowledge</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 500 | 506 |
| Mean Square | 46778.03 | 68.02 | 3.71 | 242.89 | 84.94 | 178.67 |
| F | 550.71 | .80 | .04 | 2.86 | | |
| P | <.001 | .450 | .834 | .058 | | |
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 501 | 507 |
| Mean Square | 66137.04 | 153.90 | 185.41 | 41.09 | 118.24 | 249.34 |
| F | 559.36 | 1.30 | 1.57 | .35 | | |
| P | <.001 | .273 | .211 | .707 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 499 | 505 |
| Mean Square | 64397.94 | 16.95 | 31.77 | 96.86 | 89.60 | 217.67 |
| F | 718.66 | .19 | .36 | 1.08 | | |
| P | <.001 | .828 | .552 | .340 | | |
| <u>Language</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 498 | 504 |
| Mean Square | 59487.18 | 114.10 | 1729.98 | 6.11 | 76.59 | 199.95 |
| F | 776.68 | 1.49 | 22.59 | .73 | | |
| P | <.001 | .226 | <.001 | .481 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 506 | 512 |
| Mean Square | 29393.86 | 147.02 | 3951.71 | 13.40 | 92.41 | 159.78 |
| F | 318.07 | 1.59 | 42.76 | .15 | | |
| P | <.001 | .205 | <.001 | .855 | | |

Table 5.6. (Continued):

| Source | Covariate | Class (C) | Sex (S) | C X S | Residual | Total |
|-----------------------------|-----------|-----------|---------|-------|----------|--------|
| <u>Math Computation</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 506 | 512 |
| Mean Square | 36984.00 | 567.82 | 373.82 | 34.17 | 82.36 | 157.36 |
| F | 449.08 | 6.90 | 4.54 | .42 | | |
| P | <.001 | .001 | .034 | .661 | | |
| <u>Math Concepts</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 506 | 512 |
| Mean Square | 41441.29 | 395.43 | 2.80 | 1.14 | 72.62 | 154.18 |
| F | 570.66 | 5.45 | .04 | .02 | | |
| P | <.001 | .005 | .844 | .984 | | |
| <u>Math Problem Solving</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 506 | 512 |
| Mean Square | 49678.85 | 598.22 | .13 | 1.40 | 89.89 | 187.75 |
| F | 552.66 | 6.66 | .00 | .02 | | |
| P | <.001 | .001 | .970 | .985 | | |
| <u>Math Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 506 | 512 |
| Mean Square | 48542.81 | 598.04 | 100.48 | 3.70 | 70.70 | 167.39 |
| F | 686.59 | 8.46 | 1.42 | .05 | | |
| P | <.001 | <.001 | .234 | .949 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 501 | 507 |
| Mean Square | 37995.42 | .10 | 1779.72 | 6.71 | 59.49 | 135.71 |
| F | 638.61 | .00 | 29.91 | .11 | | |
| P | <.001 | .998 | <.001 | .893 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 501 | 507 |
| Mean Square | 53968.7* | 434.40 | 185.70 | 45.42 | 82.74 | 189.80 |
| F | 652.29 | 5.25 | 2.24 | .55 | | |
| P | <.001 | .006 | .135 | .578 | | |

Table 5.7. Mean Mental Ability and Mean Educational Achievement for the Grade 8 Class of 1977-78 and the Grade 7 Class of 1979-80 Who Were Not Part of a Longitudinal Cohort: Carl Sandburg Junior High School

| | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | |
|------------------------------|----------------|-----------|-------|----------------|-------|-----------|-------|---------------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 7 | | | | | | | | | | | | | |
| Total | 154 | 109.30 | 13.28 | 93.98 | 11.35 | 94.13 | 14.25 | 95.27 | 12.94 | 101.11 | 13.24 | 99.84 | 13.41 |
| Male | 77 | 110.39 | 12.02 | 94.38 | 11.55 | 92.31 | 14.83 | 94.53 | 13.11 | 98.66 | 13.86 | 98.52 | 12.85 |
| Female | 77 | 108.21 | 14.44 | 93.58 | 11.21 | 95.95 | 13.50 | 96.01 | 12.81 | 103.56 | 12.18 | 101.17 | 13.90 |
| 1st Quarter (lowest) | | | | | | | | | | | | | |
| Total | 39 | 92.31 | 9.05 | 83.36 | 9.81 | 80.69 | 12.40 | 82.72 | 10.03 | 88.74 | 11.57 | 91.95 | 13.69 |
| Male | 16 | 94.06 | 5.95 | 84.13 | 11.56 | 76.00 | 14.55 | 81.06 | 11.76 | 83.50 | 10.92 | 88.50 | 11.89 |
| Female | 23 | 91.09 | 10.65 | 82.83 | 8.63 | 83.96 | 9.70 | 83.87 | 8.73 | 92.39 | 10.77 | 94.35 | 14.59 |
| 2nd Quarter | | | | | | | | | | | | | |
| Total | 38 | 106.34 | 2.54 | 91.00 | 7.48 | 91.63 | 8.72 | 92.24 | 7.85 | 97.45 | 9.05 | 96.32 | 12.46 |
| Male | 23 | 105.91 | 2.56 | 90.04 | 6.24 | 90.52 | 9.33 | 91.04 | 7.33 | 95.30 | 8.87 | 95.70 | 12.02 |
| Female | 15 | 107.00 | 2.45 | 92.47 | 9.10 | 93.33 | 7.68 | 94.07 | 8.53 | 100.73 | 8.58 | 97.27 | 13.47 |
| 3rd Quarter | | | | | | | | | | | | | |
| Total | 38 | 113.63 | 2.56 | 96.84 | 7.95 | 96.82 | 10.30 | 98.00 | 9.05 | 105.84 | 8.10 | 101.53 | 10.81 |
| Male | 16 | 113.63 | 2.83 | 96.81 | 7.40 | 95.00 | 10.79 | 97.00 | 9.74 | 102.44 | 7.92 | 98.63 | 9.52 |
| Female | 22 | 113.64 | 2.42 | 96.86 | 6.95 | 98.14 | 9.98 | 98.73 | 8.68 | 109.24 | 7.45 | 103.64 | 11.40 |
| 4th Quarter (highest) | | | | | | | | | | | | | |
| Total | 39 | 124.95 | 6.39 | 104.72 | 7.42 | 107.38 | 10.38 | 108.13 | 9.25 | 112.44 | 10.16 | 109.54 | 9.78 |
| Male | 22 | 124.59 | 6.35 | 104.59 | 8.28 | 104.09 | 10.67 | 106.18 | 10.05 | 110.45 | 11.78 | 106.68 | 9.34 |
| Female | 17 | 125.41 | 6.61 | 104.88 | 6.39 | 111.65 | 8.51 | 110.65 | 7.67 | 115.00 | 7.12 | 110.65 | 10.51 |

Table 5.7. (Continued):

| | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | | Science | | Social Studies | |
|----------------------------------|---------------------|-------|------------------|-------|-------------------------|-------|---------------|-------|-----------|-------|-------------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 7 | | | | | | | | | | | | |
| Total | 101.18 | 12.27 | 92.82 | 11.88 | 99.58 | 13.01 | 103.33 | 11.99 | 97.74 | 10.89 | 97.27 | 12.63 |
| Male | 99.87 | 13.69 | 92.66 | 12.93 | 99.56 | 13.35 | 102.81 | 13.01 | 98.43 | 12.09 | 97.47 | 13.91 |
| Female | 102.49 | 10.58 | 92.97 | 10.80 | 99.61 | 12.75 | 103.86 | 10.93 | 97.05 | 9.56 | 97.08 | 11.30 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 90.49 | 9.10 | 81.10 | 7.97 | 86.54 | 9.87 | 90.97 | 7.91 | 86.77 | 9.20 | 85.72 | 9.18 |
| Male | 85.50 | 9.20 | 77.69 | 6.63 | 83.00 | 8.79 | 86.88 | 6.85 | 84.94 | 12.27 | 83.56 | 11.66 |
| Female | 97.96 | 7.38 | 83.48 | 8.08 | 89.00 | 10.01 | 93.83 | 7.44 | 88.04 | 6.26 | 87.22 | 6.87 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 98.13 | 8.78 | 90.21 | 7.95 | 96.39 | 9.81 | 100.21 | 7.96 | 96.18 | 6.98 | 92.89 | 8.87 |
| Male | 97.48 | 8.73 | 89.91 | 8.70 | 96.48 | 9.24 | 99.91 | 8.30 | 95.96 | 7.44 | 93.04 | 9.88 |
| Female | 99.13 | 9.06 | 90.67 | 6.89 | 96.27 | 10.96 | 100.67 | 7.68 | 96.53 | 6.45 | 92.67 | 7.38 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 103.53 | 10.13 | 95.26 | 7.27 | 103.84 | 8.40 | 106.45 | 7.77 | 99.34 | 6.12 | 99.21 | 6.84 |
| Male | 99.63 | 12.07 | 93.19 | 6.50 | 102.75 | 7.17 | 103.88 | 8.02 | 100.38 | 6.73 | 98.75 | 7.97 |
| Female | 106.36 | 7.52 | 96.77 | 7.56 | 104.64 | 9.27 | 108.32 | 7.18 | 98.59 | 5.68 | 99.55 | 6.07 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 112.56 | 9.12 | 104.69 | 9.66 | 111.59 | 8.43 | 115.69 | 7.92 | 108.67 | 7.59 | 111.21 | 8.78 |
| Male | 113.00 | 9.47 | 106.05 | 9.87 | 112.50 | 7.85 | 116.64 | 7.58 | 109.41 | 7.54 | 111.27 | 9.29 |
| Female | 112.00 | 8.89 | 102.94 | 9.38 | 110.41 | 9.23 | 114.47 | 8.42 | 107.71 | 7.77 | 111.12 | 8.34 |

Table 5.7. (Continued):

| | Mental Ability | | | Word Knowledge | | Reading | | Reading Total | | Language | | Spelling | |
|------------------------------|----------------|-----------|-------|----------------|-------|-----------|-------|---------------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 8 | | | | | | | | | | | | | |
| Total | 178 | 105.60 | 14.46 | 97.16 | 12.80 | 95.98 | 14.84 | 98.07 | 14.17 | 100.88 | 14.61 | 100.37 | 12.36 |
| Male | 98 | 105.36 | 13.56 | 97.94 | 12.83 | 94.97 | 14.88 | 98.04 | 14.31 | 99.65 | 14.48 | 97.88 | 12.33 |
| Female | 80 | 105.89 | 15.56 | 96.21 | 12.78 | 97.23 | 14.78 | 98.11 | 14.09 | 102.38 | 14.71 | 103.41 | 11.77 |
| 1st Quarter (Lowest) | | | | | | | | | | | | | |
| Total | 44 | 88.18 | 10.08 | 84.18 | 9.71 | 81.68 | 11.16 | 83.55 | 9.84 | 85.25 | 10.22 | 89.30 | 10.66 |
| Male | 23 | 88.61 | 9.59 | 85.09 | 8.98 | 82.09 | 11.74 | 84.35 | 9.73 | 84.35 | 8.17 | 87.26 | 10.22 |
| Female | 21 | 87.71 | 10.80 | 83.19 | 10.58 | 81.24 | 10.77 | 82.67 | 10.12 | 86.24 | 12.21 | 91.52 | 10.93 |
| 2nd Quarter | | | | | | | | | | | | | |
| Total | 45 | 100.53 | 1.89 | 92.98 | 8.35 | 89.82 | 8.84 | 92.20 | 7.53 | 95.49 | 7.67 | 96.04 | 8.83 |
| Male | 28 | 100.64 | 2.09 | 93.07 | 7.83 | 88.21 | 9.63 | 91.50 | 8.50 | 94.32 | 7.73 | 93.25 | 7.41 |
| Female | 17 | 100.35 | 1.54 | 92.82 | 9.38 | 92.47 | 6.83 | 93.35 | 5.62 | 97.41 | 7.38 | 100.65 | 9.24 |
| 3rd Quarter | | | | | | | | | | | | | |
| Total | 44 | 110.07 | 2.61 | 101.66 | 8.31 | 100.98 | 9.84 | 102.89 | 9.12 | 105.75 | 8.62 | 104.48 | 8.60 |
| Male | 22 | 109.77 | 2.64 | 102.82 | 7.74 | 99.41 | 10.84 | 102.77 | 9.50 | 103.64 | 9.38 | 101.14 | 9.61 |
| Female | 22 | 110.36 | 2.61 | 100.50 | 8.86 | 102.55 | 8.68 | 103.00 | 8.94 | 107.86 | 7.40 | 107.82 | 5.97 |
| 4th Quarter (Highest) | | | | | | | | | | | | | |
| Total | 45 | 123.31 | 7.80 | 109.64 | 7.99 | 111.24 | 9.19 | 113.44 | 8.00 | 116.78 | 8.29 | 111.49 | 8.26 |
| Male | 25 | 122.16 | 6.45 | 110.92 | 9.30 | 110.48 | 8.99 | 113.80 | 8.45 | 116.20 | 9.21 | 109.96 | 9.00 |
| Female | 20 | 124.75 | 9.19 | 108.05 | 5.82 | 112.20 | 9.57 | 113.00 | 7.59 | 117.50 | 7.14 | 113.40 | 6.97 |

Table 5.7. (Continued):

| | Math Computation | | Math Concepts | | Math Problem Solving | | Math Total | | Science | | Social Studies | |
|----------------------------------|---------------------|-------|------------------|-------|-------------------------|-------|---------------|-------|-----------|-------|-------------------|-------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 8 | | | | | | | | | | | | |
| Total | 99.23 | 13.37 | 91.71 | 12.90 | 99.51 | 14.45 | 102.12 | 13.73 | 98.75 | 11.76 | 100.30 | 13.88 |
| Male | 99.10 | 13.25 | 91.66 | 13.25 | 99.46 | 14.79 | 101.94 | 13.80 | 100.13 | 12.15 | 101.21 | 14.22 |
| Female | 99.39 | 13.61 | 91.76 | 12.53 | 99.56 | 14.11 | 102.35 | 13.72 | 97.05 | 11.10 | 99.19 | 13.46 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 87.32 | 8.40 | 79.14 | 8.04 | 85.70 | 11.43 | 88.70 | 8.84 | 87.48 | 8.73 | 86.34 | 9.36 |
| Male | 87.13 | 7.44 | 78.61 | 7.37 | 86.00 | 12.14 | 88.52 | 8.29 | 89.04 | 8.29 | 87.04 | 7.44 |
| Female | 87.52 | 9.52 | 79.71 | 8.87 | 85.38 | 10.88 | 88.90 | 9.62 | 85.76 | 9.07 | 85.57 | 11.23 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 94.87 | 9.89 | 86.44 | 7.98 | 93.96 | 9.86 | 96.51 | 9.00 | 96.09 | 6.65 | 95.93 | 7.54 |
| Male | 94.00 | 9.17 | 86.29 | 8.93 | 93.46 | 10.53 | 95.89 | 9.37 | 97.79 | 7.09 | 96.21 | 8.55 |
| Female | 96.29 | 11.11 | 86.71 | 6.35 | 94.76 | 8.90 | 97.53 | 8.52 | 93.29 | 4.83 | 95.47 | 5.70 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 101.68 | 9.37 | 95.43 | 8.32 | 103.48 | 9.10 | 105.80 | 9.01 | 100.59 | 9.25 | 103.86 | 11.27 |
| Male | 101.50 | 8.01 | 95.82 | 8.55 | 102.77 | 8.80 | 105.50 | 8.52 | 100.50 | 10.96 | 104.50 | 11.83 |
| Female | 101.86 | 10.74 | 95.05 | 8.26 | 104.18 | 9.55 | 106.09 | 9.66 | 100.68 | 7.51 | 103.23 | 10.91 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 112.84 | 10.49 | 105.62 | 8.74 | 114.67 | 7.83 | 117.27 | 7.81 | 110.62 | 8.49 | 114.84 | 8.08 |
| Male | 113.72 | 10.59 | 106.04 | 8.82 | 115.64 | 7.65 | 117.92 | 7.18 | 112.64 | 9.28 | 116.96 | 8.47 |
| Female | 111.75 | 10.53 | 105.10 | 8.83 | 113.45 | 8.08 | 116.45 | 8.66 | 108.10 | 6.79 | 112.20 | 6.88 |

Table 5.8. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 1: Carl Sandburg Junior High School

| | Mental Ability | | | Word Knowledge | | | | Reading | | | |
|-----------------------|----------------|-----------|-------|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 136 | 107.33 | 11.14 | 92.51 | 11.04 | 98.00 | 12.00 | 91.85 | 13.73 | 97.54 | 14.36 |
| Male | 78 | 106.81 | 11.94 | 92.73 | 11.46 | 97.65 | 12.54 | 91.86 | 15.19 | 97.38 | 15.74 |
| Female | 58 | 108.03 | 10.01 | 92.22 | 10.53 | 98.47 | 11.32 | 91.83 | 11.61 | 97.76 | 12.40 |
| 1st Quarter (Lowest) | | | | | | | | | | | |
| Total | 34 | 93.26 | 7.20 | 81.50 | 8.71 | 85.97 | 10.51 | 77.09 | 9.18 | 82.21 | 9.11 |
| Male | 22 | 93.05 | 7.38 | 81.77 | 7.38 | 85.55 | 9.59 | 76.95 | 7.94 | 81.59 | 10.38 |
| Female | 12 | 93.67 | 7.18 | 81.00 | 11.10 | 86.75 | 12.44 | 77.37 | 11.52 | 83.33 | 6.41 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 34 | 104.50 | 2.19 | 90.50 | 7.04 | 95.21 | 7.52 | 88.38 | 8.69 | 93.29 | 8.36 |
| Male | 21 | 104.57 | 2.31 | 91.38 | 7.68 | 96.29 | 8.58 | 88.81 | 10.03 | 94.48 | 9.80 |
| Female | 13 | 104.38 | 2.06 | 89.08 | 5.87 | 93.46 | 5.25 | 87.69 | 6.25 | 91.38 | 5.08 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 34 | 110.62 | 2.02 | 95.12 | 7.26 | 100.85 | 6.16 | 94.85 | 6.06 | 101.09 | 8.48 |
| Male | 15 | 110.47 | 2.10 | 95.33 | 6.64 | 99.73 | 6.71 | 94.00 | 6.55 | 99.93 | 5.98 |
| Female | 19 | 110.74 | 2.00 | 94.95 | 7.89 | 101.74 | 5.70 | 95.53 | 5.74 | 102.00 | 10.10 |
| 4th Quarter (Highest) | | | | | | | | | | | |
| Total | 34 | 120.94 | 5.72 | 102.94 | 8.49 | 109.97 | 8.41 | 107.06 | 9.51 | 113.59 | 8.93 |
| Male | 20 | 121.55 | 6.70 | 104.25 | 9.57 | 110.85 | 8.12 | 109.85 | 10.80 | 115.90 | 9.66 |
| Female | 14 | 120.07 | 3.99 | 101.07 | 6.55 | 108.71 | 8.96 | 103.07 | 5.46 | 110.29 | 6.78 |

Tab). 5.8. (Continued):

| | Reading Total | | | | Language | | | | Spelling | | | |
|-------------|---------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 93.20 | 12.51 | 99.13 | 13.75 | 96.76 | 13.31 | 100.57 | 13.76 | 95.35 | 12.00 | 99.01 | 12.47 |
| Male | 93.31 | 13.26 | 98.77 | 14.79 | 94.31 | 13.78 | 98.50 | 15.17 | 93.83 | 12.60 | 97.09 | 12.10 |
| Female | 93.05 | 11.55 | 99.62 | 12.31 | 100.07 | 11.97 | 103.36 | 11.12 | 97.38 | 10.92 | 101.60 | 12.59 |
| 1st Quarter | | | | | | | | | | | | |
| (Lowest) | | | | | | | | | | | | |
| Total | 79.59 | 9.08 | 84.44 | 9.11 | 81.97 | 8.99 | 85.44 | 9.16 | 84.76 | 10.15 | 88.09 | 9.01 |
| Male | 79.42 | 7.30 | 83.86 | 9.11 | 79.32 | 8.69 | 82.50 | 8.08 | 83.32 | 10.64 | 86.00 | 7.21 |
| Female | 79.17 | 12.06 | 85.50 | 9.41 | 86.83 | 7.64 | 90.83 | 8.84 | 87.42 | 9.02 | 91.92 | 10.94 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 90.29 | 5.85 | 95.06 | 8.49 | 93.97 | 7.42 | 97.18 | 7.63 | 92.21 | 7.95 | 96.50 | 8.58 |
| Male | 90.86 | 6.74 | 96.19 | 10.06 | 93.43 | 8.66 | 96.48 | 8.57 | 91.67 | 7.79 | 96.24 | 7.85 |
| Female | 89.38 | 4.13 | 93.23 | 4.85 | 94.85 | 5.03 | 98.31 | 5.95 | 93.08 | 8.44 | 96.92 | 9.98 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 96.09 | 6.54 | 102.47 | 7.11 | 101.41 | 7.91 | 105.29 | 8.20 | 99.59 | 9.33 | 103.12 | 10.74 |
| Male | 95.80 | 6.81 | 101.07 | 6.03 | 98.07 | 6.12 | 102.07 | 6.71 | 96.33 | 9.47 | 99.33 | 8.51 |
| Female | 96.32 | 6.51 | 103.58 | 7.83 | 104.05 | 8.30 | 107.84 | 8.53 | 102.16 | 8.60 | 106.11 | 11.58 |
| 4th Quarter | | | | | | | | | | | | |
| (Highest) | | | | | | | | | | | | |
| Total | 106.82 | 9.03 | 114.56 | 8.45 | 109.71 | 9.87 | 114.38 | 9.88 | 104.82 | 9.97 | 108.35 | 11.34 |
| Male | 108.85 | 9.73 | 116.15 | 8.66 | 108.90 | 9.15 | 115.55 | 11.52 | 105.80 | 9.99 | 108.50 | 11.54 |
| Female | 103.93 | 7.28 | 112.29 | 7.88 | 110.86 | 11.07 | 112.71 | 6.99 | 103.43 | 10.15 | 108.14 | 11.47 |

Table 5.8. (Continued):

| | Math Computation | | | | Math Concepts | | | | Math Problem Solving | | | |
|-----------------------|------------------|-------|-----------|-------|---------------|-------|-----------|-------|----------------------|-------|-----------|-------|
| | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 94.99 | 11.91 | 98.94 | 11.48 | 88.04 | 11.86 | 91.43 | 11.66 | 94.97 | 12.25 | 97.71 | 13.16 |
| Male | 93.76 | 12.23 | 98.01 | 10.78 | 87.29 | 12.81 | 91.31 | 12.77 | 94.55 | 12.78 | 97.40 | 13.31 |
| Female | 96.64 | 11.37 | 100.19 | 12.33 | 89.03 | 10.47 | 91.59 | 10.10 | 95.53 | 11.59 | 98.14 | 13.06 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 84.06 | 11.71 | 88.71 | 9.74 | 77.18 | 9.89 | 81.44 | 8.86 | 82.85 | 9.60 | 85.50 | 9.05 |
| Male | 83.09 | 11.78 | 89.23 | 8.89 | 76.50 | 10.34 | 80.64 | 8.97 | 82.32 | 9.71 | 85.00 | 9.39 |
| Female | 85.83 | 11.90 | 87.75 | 11.51 | 78.42 | 9.34 | 82.92 | 8.85 | 83.83 | 9.76 | 86.42 | 8.70 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 92.38 | 9.19 | 95.47 | 8.48 | 85.15 | 7.26 | 87.35 | 7.06 | 91.74 | 8.13 | 93.38 | 7.88 |
| Male | 91.90 | 9.20 | 95.52 | 8.61 | 84.76 | 8.53 | 87.43 | 8.26 | 92.10 | 8.96 | 93.62 | 6.55 |
| Female | 93.15 | 9.49 | 95.38 | 8.63 | 85.77 | 4.80 | 87.23 | 4.85 | 91.15 | 6.88 | 93.00 | 9.95 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 100.35 | 7.21 | 104.09 | 8.61 | 89.94 | 7.51 | 94.35 | 7.56 | 99.47 | 8.53 | 101.35 | 10.87 |
| Male | 98.87 | 7.61 | 102.80 | 9.43 | 88.47 | 7.86 | 94.00 | 8.44 | 99.93 | 8.68 | 100.27 | 8.52 |
| Female | 101.53 | 6.85 | 105.11 | 8.03 | 91.11 | 7.21 | 94.63 | 7.02 | 99.11 | 8.63 | 102.21 | 12.59 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 103.15 | 8.88 | 107.50 | 8.63 | 99.88 | 7.49 | 102.56 | 10.71 | 105.82 | 8.87 | 110.62 | 9.38 |
| Male | 103.60 | 7.94 | 106.70 | 6.84 | 100.95 | 9.24 | 105.10 | 9.64 | 106.55 | 7.96 | 112.85 | 8.36 |
| Female | 102.50 | 10.35 | 108.64 | 10.88 | 98.36 | 9.97 | 98.93 | 11.45 | 104.79 | 10.26 | 107.43 | 10.14 |

Table 5.8. (Continued):

| | Math | | | | Science | | | | Social Studies | | | |
|--------------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|----------------|-------|-----------|-------|
| | Total | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 97.71 | 11.92 | 101.13 | 12.25 | 96.82 | 9.79 | 100.24 | 12.05 | 94.45 | 10.79 | 98.45 | 11.86 |
| Male | 96.82 | 12.54 | 100.51 | 12.46 | 98.32 | 10.64 | 101.87 | 13.67 | 94.99 | 11.80 | 99.01 | 13.11 |
| Female | 98.90 | 11.01 | 101.95 | 12.01 | 94.79 | 8.17 | 98.05 | 9.10 | 93.72 | 9.31 | 97.69 | 9.99 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 85.82 | 9.63 | 89.18 | 9.29 | 88.03 | 8.69 | 88.47 | 8.70 | 83.38 | 9.06 | 86.41 | 7.76 |
| Male | 84.95 | 9.74 | 88.73 | 9.20 | 88.64 | 9.43 | 87.91 | 9.94 | 83.59 | 9.74 | 85.50 | 9.00 |
| Female | 87.42 | 9.64 | 90.00 | 9.80 | 86.92 | 7.39 | 89.50 | 6.05 | 83.00 | 8.06 | 88.08 | 4.64 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 94.44 | 7.46 | 96.97 | 6.68 | 93.94 | 5.94 | 97.26 | 7.35 | 92.26 | 5.89 | 95.88 | 7.58 |
| Male | 94.19 | 8.13 | 97.05 | 6.66 | 96.14 | 5.55 | 99.29 | 7.38 | 93.33 | 6.12 | 97.38 | 8.15 |
| Female | 94.85 | 6.53 | 96.85 | 6.97 | 90.38 | 4.86 | 94.00 | 6.25 | 90.54 | 5.27 | 93.46 | 6.09 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 101.85 | 7.34 | 105.47 | 8.70 | 98.53 | 6.13 | 102.94 | 9.00 | 97.29 | 6.34 | 100.32 | 6.51 |
| Male | 101.07 | 7.74 | 104.27 | 8.55 | 100.53 | 6.24 | 106.87 | 8.68 | 97.20 | 7.45 | 101.00 | 5.72 |
| Female | 102.47 | 7.15 | 106.42 | 8.93 | 96.95 | 5.70 | 99.84 | 8.19 | 97.37 | 5.52 | 99.79 | 7.18 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 108.71 | 8.93 | 112.88 | 8.94 | 106.76 | 7.12 | 112.29 | 8.60 | 104.85 | 8.29 | 111.18 | 9.41 |
| Male | 109.45 | 8.14 | 114.30 | 7.04 | 109.60 | 6.93 | 116.20 | 8.13 | 107.60 | 7.41 | 114.10 | 7.48 |
| Female | 107.64 | 10.18 | 110.86 | 11.08 | 102.71 | 5.33 | 105.71 | 5.84 | 100.93 | 8.13 | 107.00 | 10.54 |

Table 5.9. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 1: Carl Sandburg Junior High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 71.29 | 5690.78 | 54.06 | 116.98 | 1981.12 | 24.19 | 21.18 | 6.75 | 16.42 |
| F | .61 | 48.65 | .46 | | 120.65 | 1.47 | 1.29 | .41 | |
| P | .436 | <.001 | .709 | | <.001 | .227 | .281 | .745 | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 119.96 | 10172.07 | 217.39 | 109.06 | 2110.53 | 1.22 | 12.51 | 9.49 | 37.11 |
| F | 1.10 | 93.27 | 1.99 | | 56.88 | .03 | .34 | .26 | |
| P | .296 | <.001 | .118 | | <.001 | .857 | .799 | .857 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 85.76 | 8998.68 | 117.44 | 113.12 | 2307.03 | 15.03 | 32.79 | 11.81 | 16.58 |
| F | .76 | 79.55 | 1.04 | | 139.23 | .91 | 1.98 | .71 | |
| P | .386 | <.001 | .378 | | <.001 | .343 | .120 | .546 | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 909.63 | 8428.76 | 236.07 | 120.66 | 910.08 | 14.40 | 2.96 | 27.57 | 21.49 |
| F | 7.54 | 69.85 | 1.96 | | 42.35 | .67 | .14 | 1.28 | |
| P | .007 | <.001 | .124 | | <.001 | .415 | .937 | .283 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 488.85 | 4445.37 | 205.18 | 162.59 | 908.46 | 16.64 | 1.69 | 6.26 | 22.32 |
| F | 3.01 | 27.34 | 1.26 | | 40.71 | .75 | .08 | .28 | |
| P | .085 | <.001 | .290 | | <.001 | .389 | .973 | .839 | |

Table 5.9. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------------|---------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 67.76 | 4595.52 | 15.85 | 142.30 | 951.22 | 8.63 | 8.06 | 36.06 | 28.09 |
| F | .48 | 32.30 | .11 | | 33.86 | .31 | .29 | 1.28 | |
| P | .491 | <.001 | .953 | | <.001 | .580 | .835 | .283 | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | .24 | 5195.92 | 143.88 | 126.03 | 713.15 | 41.80 | 26.83 | 10.79 | 23.98 |
| F | .00 | 41.23 | 1.14 | | 29.74 | 1.74 | 1.12 | .45 | |
| P | .965 | <.001 | .335 | | <.001 | .189 | .344 | .718 | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 22.34 | 6575.93 | 78.93 | 143.32 | 447.01 | .44 | 28.03 | 29.11 | 24.14 |
| F | .16 | 45.88 | .55 | | 18.52 | .02 | 1.16 | 1.21 | |
| P | .694 | <.001 | .649 | | <.001 | .892 | .327 | .310 | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 6.33 | 6204.89 | 71.97 | 129.99 | 706.67 | 8.72 | 7.50 | 4.47 | 14.66 |
| F | .05 | 47.73 | .55 | | 48.20 | .59 | .51 | .30 | |
| P | .826 | <.001 | .647 | | <.001 | .442 | .675 | .822 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 1473.30 | 4926.58 | 183.21 | 88.31 | 818.70 | 5.15 | 58.83 | 38.07 | 19.32 |
| F | 16.68 | 55.79 | 2.07 | | 42.37 | .27 | 3.04 | 1.97 | |
| P | <.001 | <.001 | .107 | | <.001 | .607 | .031 | .122 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 128 | 1 | 1 | 3 | 3 | 128 |
| Mean Square | 386.22 | 5622.62 | 194.68 | 98.05 | 1085.84 | .06 | 35.61 | 17.64 | 16.15 |
| F | 3.94 | 57.34 | 1.99 | | 67.25 | .00 | 2.21 | 1.09 | |
| P | .049 | <.001 | .119 | | <.001 | .952 | .091 | .355 | |

Table 5.10. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 2: Carl Sandburg Junior High School

| | Mental Ability | | | Word Knowledge | | | | Reading | | | |
|-----------------------|----------------|-----------|-------|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 134 | 106.40 | 12.30 | 90.96 | 12.04 | 96.43 | 12.95 | 91.00 | 16.40 | 97.99 | 15.78 |
| Male | 71 | 105.65 | 13.47 | 89.79 | 12.16 | 94.45 | 12.58 | 90.72 | 15.72 | 96.13 | 16.53 |
| Female | 63 | 107.25 | 10.87 | 92.27 | 11.86 | 98.67 | 13.10 | 91.32 | 17.26 | 100.08 | 14.75 |
| 1st Quarter (Lowest) | | | | | | | | | | | |
| Total | 34 | 91.41 | 5.62 | 78.12 | 8.56 | 81.68 | 8.13 | 73.88 | 12.51 | 80.94 | 10.82 |
| Male | 22 | 90.55 | 5.94 | 78.00 | 8.55 | 80.73 | 7.65 | 75.64 | 11.04 | 78.87 | 9.99 |
| Female | 12 | 93.00 | 4.81 | 78.33 | 8.95 | 83.42 | 9.04 | 70.67 | 14.81 | 84.75 | 11.67 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 33 | 102.27 | 2.11 | 88.61 | 6.71 | 94.00 | 6.93 | 87.58 | 8.75 | 96.15 | 10.65 |
| Male | 12 | 102.58 | 2.50 | 89.75 | 8.50 | 94.42 | 6.80 | 91.00 | 8.45 | 99.67 | 11.13 |
| Female | 21 | 102.10 | 1.89 | 87.95 | 5.58 | 93.76 | 7.16 | 85.62 | 8.49 | 94.14 | 10.08 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 33 | 109.67 | 2.89 | 92.58 | 7.53 | 99.94 | 7.70 | 94.33 | 10.16 | 101.18 | 10.52 |
| Male | 19 | 108.89 | 2.66 | 91.05 | 8.21 | 98.00 | 8.60 | 92.84 | 11.36 | 98.42 | 10.58 |
| Female | 14 | 110.71 | 2.95 | 94.64 | 6.20 | 102.57 | 5.53 | 96.36 | 8.24 | 104.93 | 9.56 |
| 4th Quarter (Highest) | | | | | | | | | | | |
| Total | 34 | 122.24 | 6.94 | 104.50 | 6.75 | 110.15 | 8.31 | 108.21 | 11.12 | 113.71 | 10.11 |
| Male | 18 | 122.72 | 8.37 | 102.89 | 6.12 | 107.50 | 5.71 | 106.72 | 10.67 | 112.44 | 11.00 |
| Female | 16 | 121.69 | 5.10 | 106.31 | 7.15 | 113.13 | 9.85 | 109.88 | 11.72 | 115.13 | 9.14 |

Table 5.10. (Continued):

| | Reading Total | | | | Language | | | | Spelling | | | |
|--------------------------|------------------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 92.11 | 14.47 | 98.60 | 14.77 | 95.99 | 14.81 | 100.25 | 14.33 | 94.50 | 14.02 | 100.04 | 12.03 |
| Male | 91.24 | 14.12 | 96.52 | 15.07 | 93.83 | 13.96 | 97.42 | 14.74 | 91.55 | 13.81 | 97.30 | 11.79 |
| Female | 93.10 | 14.92 | 100.95 | 14.19 | 98.41 | 15.47 | 103.43 | 13.26 | 97.83 | 13.61 | 103.14 | 11.63 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 76.50 | 9.67 | 81.71 | 9.08 | 80.62 | 8.09 | 84.41 | 7.87 | 80.88 | 13.11 | 89.86 | 9.85 |
| Male | 77.23 | 8.99 | 80.14 | 8.64 | 78.95 | 7.21 | 82.55 | 6.48 | 78.14 | 11.14 | 87.27 | 9.58 |
| Female | 75.17 | 11.10 | 84.58 | 9.54 | 83.67 | 9.02 | 87.83 | 9.28 | 85.92 | 15.37 | 94.58 | 8.84 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 89.00 | 6.69 | 95.97 | 8.42 | 91.97 | 12.79 | 97.45 | 8.25 | 94.00 | 9.99 | 98.79 | 9.32 |
| Male | 91.33 | 7.77 | 97.75 | 9.03 | 92.92 | 9.08 | 96.25 | 10.02 | 94.50 | 5.39 | 99.67 | 7.38 |
| Female | 87.67 | 5.77 | 94.95 | 8.10 | 91.43 | 14.68 | 98.14 | 7.24 | 93.71 | 11.98 | 98.29 | 10.41 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 94.36 | 8.54 | 102.15 | 9.17 | 100.39 | 8.07 | 103.33 | 9.12 | 97.82 | 10.80 | 101.82 | 10.24 |
| Male | 92.74 | 9.28 | 99.47 | 9.36 | 97.05 | 7.29 | 98.58 | 7.12 | 93.37 | 10.82 | 97.53 | 9.72 |
| Female | 96.57 | 7.15 | 105.79 | 7.81 | 104.93 | 6.94 | 109.79 | 7.53 | 103.86 | 7.55 | 107.64 | 7.99 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 108.56 | 9.60 | 114.62 | 8.29 | 110.97 | 9.29 | 115.79 | 9.69 | 105.38 | 9.28 | 109.74 | 9.61 |
| Male | 106.72 | 8.95 | 112.61 | 8.04 | 109.22 | 8.88 | 115.17 | 10.08 | 104.06 | 8.99 | 107.72 | 8.63 |
| Female | 110.63 | 10.16 | 116.88 | 8.23 | 112.94 | 9.64 | 116.50 | 9.51 | 106.88 | 9.67 | 112.00 | 10.41 |

Table 5.10. (Continued):

| | Math Computation | | | | Math Concepts | | | | Math Problem Solving | | | |
|--------------------------|---------------------|-------|-----------|-------|------------------|-------|-----------|-------|-------------------------|-------|-----------|-------|
| | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 96.11 | 11.49 | 102.16 | 10.49 | 90.07 | 12.15 | 93.30 | 11.65 | 95.01 | 13.92 | 100.51 | 12.42 |
| Male | 95.18 | 12.80 | 101.07 | 10.98 | 89.01 | 12.74 | 92.30 | 12.05 | 93.61 | 14.74 | 99.94 | 12.52 |
| Female | 97.16 | 9.79 | 103.38 | 9.85 | 91.25 | 11.43 | 94.43 | 11.17 | 96.60 | 12.87 | 101.14 | 12.37 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 84.44 | 9.92 | 92.24 | 7.35 | 79.41 | 8.88 | 81.29 | 7.66 | 80.12 | 10.13 | 87.09 | 8.27 |
| Male | 82.95 | 10.03 | 91.23 | 7.35 | 78.18 | 9.20 | 80.59 | 8.12 | 78.05 | 9.29 | 87.09 | 8.53 |
| Female | 87.17 | 9.54 | 94.08 | 7.29 | 81.67 | 8.15 | 82.58 | 6.87 | 83.92 | 10.90 | 87.08 | 8.15 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 93.27 | 8.14 | 99.61 | 7.92 | 85.21 | 7.70 | 89.82 | 7.78 | 91.18 | 8.00 | 97.61 | 7.92 |
| Male | 93.08 | 10.42 | 100.00 | 10.94 | 86.00 | 9.57 | 89.08 | 9.44 | 92.92 | 9.50 | 99.75 | 8.90 |
| Female | 93.38 | 6.80 | 99.38 | 5.87 | 84.76 | 6.63 | 90.24 | 6.88 | 90.19 | 7.07 | 96.38 | 7.24 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 101.97 | 5.30 | 106.21 | 7.23 | 94.48 | 8.90 | 98.36 | 8.38 | 100.58 | 7.59 | 106.27 | 8.46 |
| Male | 100.53 | 5.31 | 103.26 | 6.44 | 92.84 | 9.33 | 97.37 | 7.80 | 97.68 | 6.15 | 103.68 | 7.13 |
| Female | 103.93 | 4.80 | 110.21 | 6.44 | 96.71 | 8.07 | 99.71 | 9.24 | 104.50 | 7.79 | 109.79 | 9.10 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 104.85 | 8.95 | 110.62 | 8.92 | 101.15 | 9.76 | 103.76 | 7.89 | 108.24 | 10.30 | 111.15 | 8.88 |
| Male | 105.89 | 10.05 | 111.50 | 7.85 | 100.22 | 10.24 | 103.39 | 7.11 | 108.78 | 10.66 | 111.83 | 8.43 |
| Female | 103.69 | 7.70 | 109.63 | 10.16 | 102.19 | 9.40 | 104.19 | 8.90 | 107.63 | 10.18 | 110.38 | 9.58 |

Table 5.10. (Continued):

| | Math Total | | | | Science | | | | Social Studies | | | |
|--------------------------|---------------|-------|-----------|-------|-----------|-------|-----------|-------|-------------------|-------|-----------|-------|
| | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | | Grade 7 | | Grade 8 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 98.77 | 12.21 | 104.16 | 11.40 | 94.92 | 10.95 | 99.22 | 10.94 | 94.80 | 12.91 | 98.46 | 14.61 |
| Male | 97.62 | 13.17 | 103.18 | 11.74 | 95.63 | 11.45 | 100.46 | 11.64 | 94.82 | 14.29 | 97.49 | 15.04 |
| Female | 100.06 | 10.99 | 105.27 | 10.99 | 94.11 | 10.38 | 97.81 | 9.99 | 94.78 | 11.27 | 99.56 | 14.15 |
| 1st Quarter (Lowest) | | | | | | | | | | | | |
| Total | 85.82 | 8.06 | 91.82 | 6.67 | 83.91 | 8.58 | 88.65 | 6.72 | 81.18 | 5.83 | 81.94 | 8.74 |
| Male | 84.14 | 7.91 | 91.14 | 6.66 | 84.45 | 7.71 | 89.91 | 6.71 | 80.59 | 5.64 | 81.77 | 8.08 |
| Female | 88.92 | 7.72 | 93.08 | 6.80 | 82.92 | 10.29 | 86.33 | 6.36 | 82.25 | 6.28 | 82.25 | 10.20 |
| 2nd Quarter | | | | | | | | | | | | |
| Total | 94.67 | 7.04 | 100.97 | 7.36 | 91.85 | 6.17 | 94.85 | 6.46 | 90.06 | 5.75 | 95.18 | 8.87 |
| Male | 95.50 | 9.53 | 101.75 | 9.27 | 93.92 | 5.00 | 97.17 | 6.34 | 91.58 | 5.68 | 96.42 | 9.71 |
| Female | 94.19 | 5.35 | 100.52 | 6.24 | 90.67 | 6.56 | 93.52 | 6.30 | 89.19 | 5.74 | 94.48 | 8.51 |
| 3rd Quarter | | | | | | | | | | | | |
| Total | 104.33 | 6.76 | 109.24 | 7.79 | 98.15 | 6.56 | 102.64 | 6.53 | 98.00 | 8.26 | 102.09 | 7.70 |
| Male | 102.16 | 5.95 | 106.79 | 7.14 | 98.11 | 6.90 | 102.79 | 7.60 | 97.47 | 9.76 | 100.58 | 8.83 |
| Female | 107.29 | 6.87 | 112.57 | 7.63 | 98.21 | 6.31 | 102.43 | 5.00 | 98.71 | 5.92 | 104.14 | 5.49 |
| 4th Quarter (Highest) | | | | | | | | | | | | |
| Total | 110.29 | 9.29 | 114.68 | 7.82 | 107.76 | 8.06 | 110.71 | 8.55 | 109.91 | 8.98 | 114.65 | 8.69 |
| Male | 110.72 | 9.89 | 115.06 | 7.10 | 107.83 | 8.47 | 113.11 | 9.38 | 111.56 | 10.30 | 114.17 | 9.05 |
| Female | 109.81 | 8.86 | 114.25 | 8.77 | 103.44 | 7.13 | 108.00 | 6.82 | 108.06 | 7.08 | 115.19 | 8.52 |

Table 5.11. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 2: Carl Sandburg Junior High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|---------|------------|--------|--------|---------|--------|-------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 314.98 | 8346.88 | 111.50 | 98.50 | 1980.59 | 44.48 | 33.75 | 2.00 | 15.40 |
| F | 3.20 | 84.74 | 1.13 | | 128.64 | 2.89 | 2.19 | .13 | |
| P | .076 | <.001 | .339 | | <.001 | .092 | .092 | .942 | |
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 34.30 | 12493.25 | 320.18 | 187.80 | 3541.83 | 174.48 | 36.68 | 109.17 | 33.62 |
| F | .18 | 66.52 | 1.70 | | 105.34 | 5.19 | 1.09 | 3.25 | |
| P | .670 | <.001 | .169 | | <.001 | .024 | .356 | .024 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 201.90 | 11705.70 | 217.70 | 134.13 | 2917.94 | 103.96 | 12.52 | 30.63 | 14.87 |
| F | 1.51 | 87.27 | 1.62 | | 196.26 | 6.99 | .84 | 2.06 | |
| P | .222 | <.001 | .187 | | <.001 | .009 | .473 | .109 | |
| <u>Language</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 1188.33 | 10511.59 | 253.41 | 133.38 | 1131.19 | 23.98 | 11.18 | 30.76 | 27.25 |
| F | 8.91 | 78.81 | 1.90 | | 41.51 | .88 | .41 | 1.13 | |
| P | .003 | <.001 | .133 | | <.001 | .350 | .746 | .340 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 1644.43 | 5046.48 | 384.64 | 175.14 | 1953.15 | .00 | 81.35 | 3.92 | 23.14 |
| F | 9.39 | 28.81 | 2.20 | | 84.41 | .00 | 3.52 | .17 | |
| P | .003 | <.001 | .092 | | <.001 | .997 | .017 | .917 | |

Table 5.11. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------------|--------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 168.99 | 4575.42 | 178.63 | 110.01 | 2360.71 | 2.56 | 26.35 | 19.52 | 18.95 |
| F | 1.54 | 41.59 | 1.62 | | 124.56 | .14 | 1.39 | 1.03 | |
| P | .217 | <.001 | .187 | | <.001 | .714 | .249 | .382 | |
| <u>Math Concepts</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 205.90 | 5979.87 | 32.02 | 117.49 | 601.86 | 3.20 | 21.62 | 13.97 | 25.41 |
| F | 1.75 | 50.90 | .27 | | 23.68 | .13 | .85 | .55 | |
| P | .188 | <.001 | .845 | | <.001 | .723 | .469 | .649 | |
| <u>Math Problem Solving</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 101.12 | 8049.39 | 291.33 | 113.11 | 1784.97 | 56.66 | 43.84 | 27.96 | 36.26 |
| F | .89 | 71.16 | 2.58 | | 49.22 | 1.56 | 1.21 | .77 | |
| P | .346 | <.001 | .057 | | <.001 | .214 | .309 | .512 | |
| <u>Math Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 178.52 | 6710.11 | 171.85 | 100.28 | 1794.33 | 3.95 | 10.76 | 9.78 | 14.62 |
| F | 1.78 | 66.92 | 1.71 | | 122.75 | .27 | .74 | .67 | |
| P | .185 | <.001 | .168 | | <.001 | .604 | .532 | .573 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | 471.98 | 5773.01 | 62.33 | 87.61 | 1132.64 | 13.03 | 10.21 | 2.30 | 16.28 |
| F | 5.39 | 65.90 | .71 | | 69.56 | .80 | .63 | .14 | |
| P | .022 | <.001 | .547 | | <.001 | .373 | .599 | .935 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 1 | 1 | 3 | 3 | 126 |
| Mean Square | .02 | 10646.46 | 69.44 | 104.29 | 871.20 | 37.17 | 68.87 | 24.38 | 23.68 |
| F | .00 | 102.08 | .67 | | 36.80 | 1.57 | 2.91 | 1.03 | |
| P | .989 | <.001 | .575 | | <.001 | .213 | .037 | .382 | |

Table 5.12. Adjusted Means in Educational Achievement for Longitudinal Cohort 1 and Cohort 2: Carl Sandhura Junior High School

| | | <u>Word Knowledge</u> | <u>Reading</u> | <u>Reading Total</u> | <u>Language</u> | <u>Spelling</u> | <u>Math Computation</u> |
|----------|-----|---------------------------|---------------------------------|--------------------------|-----------------|---------------------------|-----------------------------|
| | N | \bar{X} | \bar{X} | \bar{X} | \bar{X} | \bar{X} | \bar{X} |
| Cohort 1 | | | | | | | |
| Total | 136 | 94.88 | 94.21 | 95.71 | 98.23 | 96.86 | 96.66 |
| Male | 78 | 95.24 | 94.69 | 96.10 | 96.46 | 95.50 | 95.93 |
| Female | 58 | 94.39 | 93.57 | 95.18 | 100.60 | 98.69 | 97.64 |
| Cohort 2 | | | | | | | |
| Total | 134 | 94.08 | 94.98 | 95.82 | 98.57 | 97.59 | 99.44 |
| Male | 71 | 93.12 | 94.71 | 95.10 | 96.80 | 95.26 | 98.94 |
| Female | 63 | 95.15 | 95.30 | 96.64 | 100.55 | 100.22 | 100.02 |
| | | | | | | | |
| | | <u>Math Concepts</u> | <u>Math Problem Solving</u> | <u>Math Total</u> | <u>Science</u> | <u>Social Studies</u> | |
| | | \bar{X} | \bar{X} | \bar{X} | \bar{X} | \bar{X} | |
| Cohort 1 | | | | | | | |
| Total | | 89.39 | 95.95 | 99.05 | 98.19 | 96.05 | |
| Male | | 89.35 | 96.03 | 98.72 | 100.14 | 97.05 | |
| Female | | 89.44 | 95.85 | 99.49 | 95.56 | 94.70 | |
| Cohort 2 | | | | | | | |
| Total | | 92.03 | 98.16 | 101.84 | 97.41 | 97.04 | |
| Male | | 91.57 | 97.81 | 101.38 | 98.95 | 97.22 | |
| Female | | 92.55 | 98.55 | 102.36 | 95.68 | 96.83 | |

Table 5.13. Tests of Significance (ANCOVA) of Differences in Educational Achievement and Comparison of Gains of Longitudinal Cohort 1 and Cohort 2: Carl Sandburg Junior High School

| Source | Sex(S) | Cohort(C) | S X C | Covariate | Error | Gain(C) | G X S | G X C | G X S X C | Error |
|-----------------------|---------|-----------|--------|-----------|--------|---------|--------|--------|-----------|-------|
| <u>Word Knowledge</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 46.60 | 61.77 | 277.50 | 49112.87 | 87.81 | 4114.27 | 77.66 | .09 | 1.45 | 15.98 |
| F | .53 | .70 | 3.16 | 559.28 | | 257.53 | 4.86 | .01 | .09 | |
| P | .467 | .402 | .077 | <.001 | | <.001 | .028 | .939 | .764 | |
| <u>Reading</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 9.18 | 100.98 | 97.04 | 80901.57 | 118.24 | 5471.10 | 117.70 | 61.35 | 72.40 | 35.46 |
| F | .08 | .85 | .82 | 684.23 | | 154.28 | 3.32 | 1.73 | 2.04 | |
| P | .781 | .356 | .366 | <.001 | | <.001 | .070 | .190 | .154 | |
| <u>Reading Total</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 12.85 | 7.05 | 203.01 | 72749.45 | 97.03 | 5277.42 | 112.99 | 10.23 | 17.95 | 16.06 |
| F | .13 | .07 | 2.09 | 749.75 | | 328.69 | 7.04 | .64 | 1.12 | |
| P | .716 | .788 | .149 | <.001 | | <.001 | .008 | .425 | .291 | |
| <u>Language</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 2061.12 | 2.91 | 4.88 | 68049.36 | 104.31 | 2157.46 | 2.30 | 10.49 | 44.98 | 24.18 |
| F | 19.76 | .03 | .05 | 652.39 | | 89.22 | .09 | .43 | 1.86 | |
| P | <.001 | .868 | .829 | <.001 | | <.001 | .758 | .511 | .174 | |
| <u>Spelling</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 2203.58 | 54.99 | 104.55 | 34617.77 | 156.90 | 2864.89 | 2.42 | 106.97 | 16.25 | 22.86 |
| F | 14.04 | .35 | .67 | 220.64 | | 125.30 | .11 | 4.68 | .71 | |
| P | <.001 | .554 | .415 | <.001 | | <.001 | .745 | .031 | .400 | |

Table 5.13. (Continued):

| Source | Sex(S) | Cohort(C) | S X C | Covariate | Error | Gain(G) | G X S | G X C | G X S X C | Error |
|-----------------------------|---------|-----------|--------|-----------|--------|---------|-------|--------|-----------|-------|
| <u>Math Computation</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 259.76 | 963.78 | 13.53 | 32186.70 | 112.83 | 3304.88 | 1.14 | 154.13 | 9.00 | 23.62 |
| F | 2.30 | 8.54 | .12 | 285.27 | | 139.90 | .05 | 6.52 | .38 | |
| P | .130 | .004 | .729 | <.001 | | <.001 | .826 | .011 | .538 | |
| <u>Math Concepts</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 38.39 | 947.42 | 26.60 | 41143.65 | 101.80 | 1412.39 | 20.49 | .10 | 15.27 | 24.42 |
| F | .38 | 9.31 | .26 | 404.16 | | 57.84 | .84 | .00 | .63 | |
| P | .540 | .003 | .610 | <.001 | | <.001 | .361 | .950 | .430 | |
| <u>Math Problem Solving</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 10.46 | 667.75 | 27.92 | 52683.75 | 108.45 | 2220.79 | 34.70 | 245.46 | 20.16 | 30.45 |
| F | .10 | 6.16 | .26 | 485.79 | | 72.93 | 1.14 | 8.06 | .66 | |
| P | .756 | .014 | .612 | <.001 | | <.001 | .287 | .005 | .417 | |
| <u>Math Total</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 101.49 | 1019.37 | 1.40 | 47278.59 | 93.79 | 2555.27 | 8.29 | 135.01 | .67 | 14.40 |
| F | 1.08 | 10.87 | .01 | 504.09 | | 177.49 | .58 | 9.38 | .05 | |
| P | .299 | .001 | .903 | <.001 | | <.001 | .449 | .002 | .829 | |
| <u>Science</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 2047.41 | 38.61 | 56.74 | 39986.36 | 68.92 | 1960.15 | 16.92 | 24.63 | 5.88 | 18.51 |
| F | 29.71 | .56 | .82 | 580.21 | | 105.87 | .91 | 1.33 | .32 | |
| P | <.001 | .455 | .365 | <.001 | | <.001 | .340 | .250 | .574 | |
| <u>Social Studies</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 265 | 1 | 1 | 1 | 1 | 266 |
| Mean Square | 249.43 | 175.87 | 130.04 | 55374.54 | 91.28 | 1987.25 | 34.72 | 2.41 | 38.93 | 20.56 |
| F | 2.73 | 1.93 | 1.42 | 606.62 | | 96.64 | 1.69 | .12 | 1.89 | |
| P | .100 | .166 | .234 | <.001 | | <.001 | .195 | .733 | .170 | |

Table 5.14. Significant Differences (ANCOVA) in Educational Achievement and in Gain between Longitudinal Cohort 1 and Cohort 2: Carl Sandburg Junior High School

| | Main Effects | | | Gains | | | |
|----------------------|-------------------|-------------------|-------|---------|-------------------|-------------------|-----------|
| | Cohort(C) | Sex(S) | S X C | Gain(G) | G X C | G X S | G X S X C |
| Word Knowledge | NS | NS | NS | .001 | NS | .028 ⁵ | NS |
| Reading | NS | NS | NS | .001 | NS | NS | NS |
| Reading Total | NS | NS | NS | .001 | NS | .008 ⁵ | NS |
| Language | NS | .001 ² | NS | .001 | NS | NS | NS |
| Spelling | NS | .001 ² | NS | .001 | .031 ⁴ | NS | NS |
| Math Computation | .004 ¹ | NS | NS | .001 | .011 ⁴ | NS | NS |
| Math Concepts | .003 ¹ | NS | NS | .001 | NS | NS | NS |
| Math Problem Solving | .014 ¹ | NS | NS | .001 | .005 ⁴ | NS | NS |
| Math Total | .001 ¹ | NS | NS | .001 | .007 ⁴ | NS | NS |
| Science | NS | .001 ³ | NS | .001 | NS | NS | NS |
| Social Studies | NS | NS | NS | .001 | NS | NS | NS |

¹ The mean achievement of Cohort 2 was significantly higher than the mean of Cohort 1.

² The mean achievement of the females was significantly higher than the mean of the males.

³ The mean achievement of the males was significantly higher than the mean of the females.

⁴ Cohort 2 gained significantly more than Cohort 1.

⁵ The females gained significantly more than the males.

Table 5.15. Responses of Grade 7 and Grade 8 Students to Locally Constructed Attitude Inventory: Carl Sandburg Junior High School

| | 1977-78 | | | 1978-79 | | | 1979-80 | | | 1977-78 | | | 1978-79 | | | 1979-80 | | |
|---|---------|----|----|---------|----|----|---------|----|----|---------|----|----|---------|----|----|---------|----|----|
| | Gr. 7 | | | Gr. 7 | | | Gr. 7 | | | Gr. 8 | | | Gr. 8 | | | Gr. 8 | | |
| | A | U | D | A | U | D | A | U | D | A | U | D | A | U | D | A | U | D |
| <u>School</u> | | | | | | | | | | | | | | | | | | |
| 2. I am proud to be in this school. | 64 | 26 | 10 | 79 | 15 | 6 | 85 | 11 | 4 | 46 | 31 | 23 | 56 | 26 | 18 | 81 | 12 | 7 |
| 7. I wish I could go to a different school. | 7 | 16 | 77 | 8 | 16 | 76 | 7 | 12 | 81 | 16 | 23 | 61 | 11 | 18 | 71 | 11 | 8 | 81 |
| 12. This school has too many rules. | 23 | 27 | 50 | 25 | 13 | 62 | 16 | 20 | 64 | 38 | 21 | 41 | 36 | 18 | 46 | 34 | 14 | 52 |
| 17. Students at this school have a lot of school spirit. | 34 | 36 | 30 | 57 | 25 | 18 | 70 | 21 | 9 | 50 | 26 | 24 | 40 | 29 | 31 | 74 | 16 | 10 |
| 22. This school needs a lot of improvement. | 27 | 26 | 47 | 15 | 13 | 72 | 4 | 15 | 81 | 40 | 26 | 34 | 30 | 27 | 43 | 24 | 15 | 61 |
| TOTAL | 31 | 26 | 43 | 37 | 16 | 47 | 36 | 16 | 48 | 38 | 25 | 37 | 35 | 24 | 41 | 45 | 13 | 42 |
| <u>Teacher</u> | | | | | | | | | | | | | | | | | | |
| 1. I think I have very good teachers. | 69 | 19 | 12 | 80 | 9 | 11 | 84 | 13 | 3 | 72 | 20 | 9 | 63 | 25 | 12 | 66 | 27 | 7 |
| 6. The teachers here try to be fair with all students. | 66 | 20 | 14 | 81 | 9 | 10 | 76 | 15 | 9 | 72 | 15 | 13 | 56 | 21 | 23 | 66 | 19 | 15 |
| 11. My teachers seem to care how I am doing in school. | 66 | 21 | 13 | 74 | 17 | 9 | 68 | 22 | 10 | 70 | 21 | 9 | 61 | 25 | 14 | 68 | 25 | 7 |
| 16. My teachers are well prepared when they meet their classes. | 65 | 22 | 13 | 76 | 15 | 19 | 69 | 21 | 10 | 75 | 14 | 11 | 58 | 21 | 21 | 61 | 25 | 14 |
| 21. My teachers enforce all the school rules equally. | 53 | 25 | 22 | 55 | 21 | 24 | 51 | 24 | 25 | 50 | 29 | 21 | 37 | 30 | 33 | 48 | 27 | 25 |
| TOTAL | 64 | 21 | 15 | 73 | 12 | 15 | 70 | 19 | 11 | 67 | 20 | 13 | 55 | 24 | 21 | 62 | 25 | 12 |
| <u>Learning</u> | | | | | | | | | | | | | | | | | | |
| 4. I think my classes are very boring. | 17 | 29 | 54 | 42 | 16 | 42 | 41 | 16 | 43 | 42 | 19 | 39 | 43 | 18 | 39 | 41 | 21 | 38 |
| 9. I think my schoolwork is too hard. | 8 | 25 | 67 | 12 | 23 | 65 | 10 | 22 | 68 | 14 | 21 | 65 | 21 | 23 | 56 | 15 | 20 | 65 |
| 14. I usually understand my school assignments. | 78 | 12 | 10 | 66 | 15 | 19 | 76 | 11 | 13 | 73 | 13 | 14 | 71 | 10 | 19 | 72 | 12 | 16 |
| 19. I am satisfied with what I am learning in school. | 76 | 13 | 11 | 79 | 11 | 10 | 79 | 13 | 8 | 73 | 13 | 14 | 64 | 18 | 18 | 70 | 16 | 14 |
| 24. I get mixed up a lot in my schoolwork. | 26 | 17 | 57 | 32 | 14 | 54 | 24 | 12 | 64 | 29 | 17 | 54 | 32 | 15 | 53 | 30 | 17 | 53 |
| TOTAL | 41 | 19 | 40 | 42 | 16 | 42 | 41 | 16 | 43 | 42 | 19 | 39 | 43 | 18 | 39 | 41 | 21 | 38 |
| <u>Peers</u> | | | | | | | | | | | | | | | | | | |
| 3. Most of the students in this school are friendly. | 58 | 17 | 25 | 57 | 19 | 24 | 57 | 18 | 25 | 64 | 19 | 17 | 61 | 19 | 20 | 59 | 13 | 28 |
| 8. I have a lot of friends in school. | 79 | 10 | 11 | 67 | 15 | 18 | 79 | 13 | 8 | 76 | 14 | 10 | 78 | 10 | 12 | 78 | 12 | 10 |
| 13. The students in this school are nice kids. | 50 | 29 | 21 | 46 | 29 | 25 | 43 | 36 | 21 | 51 | 35 | 14 | 43 | 34 | 23 | 46 | 30 | 24 |
| 18. My closest friends are students at this school. | 70 | 9 | 21 | 73 | 9 | 18 | 75 | 9 | 16 | 72 | 8 | 20 | 69 | 12 | 19 | 81 | 4 | 15 |
| 23. Most of my friends want to do what I want to do. | 34 | 35 | 31 | 33 | 34 | 33 | 37 | 34 | 29 | 38 | 37 | 25 | 44 | 31 | 25 | 30 | 32 | 38 |
| TOTAL | 58 | 20 | 22 | 55 | 21 | 24 | 58 | 22 | 20 | 60 | 23 | 17 | 59 | 21 | 20 | 59 | 18 | 23 |
| <u>Self</u> | | | | | | | | | | | | | | | | | | |
| 5. Most of my teachers like me. | 49 | 41 | 10 | 56 | 31 | 13 | 47 | 43 | 10 | 54 | 40 | 6 | 50 | 34 | 16 | 53 | 34 | 13 |
| 10. I sometimes wish that I were someone else. | 48 | 14 | 38 | 45 | 12 | 43 | 44 | 12 | 44 | 39 | 12 | 49 | 39 | 15 | 46 | 44 | 12 | 44 |
| 15. Many times I am in trouble at school. | 14 | 9 | 77 | 11 | 18 | 71 | 7 | 13 | 80 | 14 | 14 | 72 | 21 | 10 | 69 | 10 | 15 | 75 |
| 20. My schoolwork is very good most of the time. | 63 | 21 | 16 | 65 | 19 | 16 | 68 | 17 | 15 | 60 | 23 | 17 | 59 | 25 | 16 | 61 | 26 | 13 |
| 25. Most of the children in my classes like me. | 59 | 32 | 9 | 59 | 28 | 13 | 60 | 30 | 10 | 59 | 30 | 11 | 64 | 27 | 9 | 65 | 25 | 10 |
| TOTAL | 46 | 24 | 30 | 47 | 22 | 31 | 45 | 23 | 32 | 45 | 24 | 31 | 47 | 22 | 31 | 46 | 23 | 31 |
| GRAND TOTAL | 48 | 22 | 30 | 51 | 18 | 31 | 50 | 19 | 31 | 51 | 22 | 27 | 48 | 22 | 30 | 51 | 20 | 29 |

Table 6.1. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 9 PACE Groups: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|----------------|-----------|-------|---------------|------|------------|------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | | | | | |
| Total | 83 | 117.27 | 13.27 | 15.92 | 5.11 | 16.11 | 5.26 | 15.48 | 4.85 | 15.81 | 4.52 | 15.84 | 4.93 |
| Male | 40 | 116.00 | 11.14 | 14.73 | 5.18 | 15.53 | 4.77 | 14.55 | 4.57 | 14.53 | 3.91 | 13.70 | 4.12 |
| Female | 43 | 118.44 | 15.02 | 17.02 | 4.85 | 16.65 | 5.67 | 16.35 | 5.09 | 17.00 | 4.76 | 17.84 | 4.83 |
| 1978-79 | | | | | | | | | | | | | |
| Total | 97 | 114.76 | 11.02 | 14.65 | 3.69 | 15.43 | 4.54 | 14.38 | 3.73 | 16.35 | 4.17 | 15.43 | 5.04 |
| Male | 46 | 115.26 | 10.78 | 14.46 | 3.81 | 15.20 | 4.54 | 14.22 | 3.69 | 15.15 | 3.96 | 13.96 | 5.65 |
| Female | 51 | 114.31 | 11.33 | 14.82 | 3.62 | 15.65 | 4.58 | 14.53 | 3.79 | 17.43 | 4.10 | 16.76 | 4.02 |
| 1979-80 | | | | | | | | | | | | | |
| Total | 109 | 119.91 | 11.21 | 16.17 | 4.46 | 15.57 | 4.67 | 15.33 | 4.35 | 16.59 | 3.75 | 15.81 | 4.77 |
| Male | 54 | 120.72 | 12.02 | 16.43 | 4.84 | 15.96 | 4.50 | 15.69 | 4.64 | 15.93 | 3.77 | 14.74 | 4.79 |
| Female | 55 | 119.11 | 10.40 | 15.91 | 4.09 | 15.18 | 4.83 | 14.98 | 4.07 | 17.24 | 3.66 | 16.85 | 4.56 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 109 | 116.08 | 13.06 | 15.96 | 4.77 | 16.28 | 4.65 | 15.62 | 4.50 | 15.85 | 4.43 | 16.09 | 4.76 |
| Male | 56 | 117.00 | 13.10 | 15.63 | 5.02 | 16.32 | 4.86 | 15.52 | 4.86 | 15.32 | 4.78 | 14.80 | 4.74 |
| Female | 53 | 115.11 | 13.07 | 16.32 | 4.51 | 16.25 | 4.46 | 15.74 | 4.12 | 16.42 | 4.01 | 17.45 | 4.43 |

| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | |
|---------|----------------|------|-----------|------|----------------|------|-----------|------|----------------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | | |
| Total | 15.90 | 4.25 | 14.24 | 5.25 | 14.63 | 5.02 | 16.22 | 5.39 | 15.70 | 4.97 |
| Male | 14.25 | 3.48 | 14.55 | 4.79 | 14.28 | 4.86 | 15.68 | 5.65 | 14.68 | 5.54 |
| Female | 17.44 | 4.36 | 13.95 | 5.69 | 14.95 | 5.20 | 16.72 | 5.15 | 16.65 | 4.23 |
| 1978-79 | | | | | | | | | | |
| Total | 16.03 | 4.01 | 13.97 | 4.40 | 13.29 | 4.14 | 16.05 | 4.50 | 16.95 | 5.03 |
| Male | 14.70 | 4.14 | 14.98 | 4.59 | 12.61 | 4.58 | 16.76 | 4.51 | 15.74 | 5.12 |
| Female | 17.24 | 3.52 | 13.06 | 4.05 | 13.90 | 3.63 | 15.41 | 4.44 | 18.04 | 4.73 |
| 1979-80 | | | | | | | | | | |
| Total | 16.42 | 3.92 | 14.78 | 5.65 | 15.37 | 4.59 | 17.87 | 4.55 | 18.40 | 4.44 |
| Male | 15.63 | 3.92 | 16.07 | 6.14 | 16.41 | 5.32 | 18.91 | 4.86 | 19.11 | 4.84 |
| Female | 17.20 | 3.80 | 13.51 | 4.85 | 14.35 | 3.50 | 16.85 | 4.02 | 17.71 | 3.93 |
| 1980-81 | | | | | | | | | | |
| Total | 16.16 | 4.36 | 14.66 | 4.87 | 15.12 | 4.40 | 16.03 | 5.22 | 17.13 | 5.49 |
| Male | 15.23 | 4.61 | 15.43 | 5.06 | 15.21 | 4.72 | 16.39 | 5.65 | 16.52 | 6.45 |
| Female | 17.13 | 3.90 | 13.85 | 4.57 | 15.02 | 4.09 | 15.64 | 4.76 | 17.77 | 4.20 |

Table 6.2. Adjusted Means in Educational Achievement for Four Successive Grade 9 PACE Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|-----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1977-78 | | | | | | | | | | | |
| Total | 83 | 15.87 | 16.06 | 15.43 | 15.76 | 15.80 | 15.86 | 14.19 | 14.58 | 16.16 | 15.64 |
| Male | 40 | 14.97 | 15.76 | 14.80 | 14.75 | 13.90 | 14.47 | 14.83 | 14.51 | 15.95 | 14.96 |
| Female | 43 | 16.70 | 16.34 | 16.02 | 16.70 | 17.58 | 17.15 | 13.59 | 14.65 | 16.37 | 16.28 |
| 1978-79 | | | | | | | | | | | |
| Total | 97 | 15.19 | 15.95 | 14.92 | 16.84 | 15.87 | 16.51 | 14.58 | 13.79 | 16.64 | 17.56 |
| Male | 46 | 14.88 | 15.60 | 14.64 | 15.53 | 14.30 | 15.07 | 15.45 | 13.00 | 17.22 | 16.22 |
| Female | 51 | 15.47 | 16.26 | 15.17 | 18.02 | 17.28 | 17.81 | 13.79 | 14.50 | 16.11 | 18.77 |
| 1979-80 | | | | | | | | | | | |
| Total | 109 | 15.50 | 14.93 | 14.66 | 15.98 | 15.27 | 15.82 | 14.02 | 14.75 | 17.14 | 17.64 |
| Male | 54 | 15.57 | 15.14 | 14.82 | 15.14 | 14.05 | 14.86 | 15.10 | 15.61 | 17.97 | 18.13 |
| Female | 55 | 15.43 | 14.72 | 14.50 | 16.80 | 16.47 | 16.77 | 12.96 | 13.90 | 16.33 | 17.16 |
| 1980-81 | | | | | | | | | | | |
| Total | 109 | 16.19 | 16.50 | 15.85 | 16.06 | 16.28 | 16.36 | 14.92 | 15.33 | 16.28 | 17.39 |
| Male | 56 | 15.64 | 16.33 | 15.53 | 15.33 | 14.81 | 15.24 | 15.44 | 15.23 | 16.41 | 16.53 |
| Female | 53 | 16.78 | 16.68 | 16.19 | 16.83 | 17.82 | 17.54 | 14.36 | 15.44 | 16.14 | 18.29 |

Table 6.3. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 9 PACE Groups: Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 3173.30 | 20.30 | 67.34 | 15.27 | 12.23 | 20.67 |
| F | 259.50 | 1.66 | 5.51 | 1.25 | | |
| P | <.001 | .175 | .019 | .292 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 2919.84 | 47.02 | 8.41 | 6.26 | 15.33 | 22.63 |
| F | 190.48 | 3.07 | .55 | .41 | | |
| P | <.001 | .028 | .459 | .747 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 3200.23 | 30.30 | 26.97 | 10.00 | 10.83 | 19.12 |
| F | 295.50 | 2.80 | 2.49 | .92 | | |
| P | <.001 | .040 | .115 | .430 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 2629.60 | 18.69 | 352.84 | 4.75 | 10.35 | 17.71 |
| F | 254.11 | 1.81 | 34.10 | .460 | | |
| P | <.001 | .146 | <.001 | .711 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 2063.40 | 20.17 | 895.80 | 6.19 | 16.49 | 23.57 |
| F | 125.16 | 1.22 | 54.34 | .38 | | |
| P | <.001 | .301 | <.001 | .771 | | |

Table 6.3. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 2544.01 | 11.80 | 567.71 | 3.73 | 9.43 | 17.02 |
| F | 269.91 | 1.25 | 60.23 | .40 | | |
| P | <.001 | .291 | <.001 | .756 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 4059.23 | 16.04 | 230.32 | 5.90 | 14.71 | 25.61 |
| F | 276.04 | 1.09 | 15.66 | .40 | | |
| P | <.001 | .353 | <.001 | .752 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 2736.82 | 43.52 | .14 | 45.27 | 13.30 | 21.00 |
| F | 205.75 | 3.27 | .01 | 3.40 | | |
| P | <.001 | .021 | .919 | .018 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 3785.25 | 20.21 | 41.26 | 19.69 | 14.23 | 24.61 |
| F | 266.09 | 1.42 | 2.90 | 1.38 | | |
| P | <.001 | .236 | .089 | .247 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 389 | 397 |
| Mean Square | 4127.75 | 79.95 | 133.48 | 60.26 | 13.89 | 25.66 |
| F | 297.16 | 5.76 | 9.61 | 4.34 | | |
| P | <.001 | .001 | .002 | .005 | | |

Table 6.4. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 10 PACE Groups: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|----------------|-----------|-------|---------------|------|------------|------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1978-79 | | | | | | | | | | | | | |
| Total | 83 | 117.11 | 13.25 | 18.12 | 5.15 | 17.87 | 5.50 | 17.53 | 5.02 | 17.92 | 4.66 | 17.01 | 5.10 |
| Male | 41 | 115.88 | 10.90 | 17.29 | 4.85 | 17.37 | 4.94 | 16.73 | 4.55 | 16.80 | 4.21 | 15.12 | 4.58 |
| Female | 42 | 118.31 | 15.24 | 18.93 | 5.35 | 18.36 | 6.01 | 18.31 | 5.37 | 19.00 | 4.86 | 18.86 | 4.95 |
| 1979-80 | | | | | | | | | | | | | |
| Total | 97 | 114.43 | 11.03 | 17.12 | 4.53 | 16.21 | 4.78 | 16.14 | 4.32 | 17.65 | 3.91 | 17.12 | 5.48 |
| Male | 47 | 114.45 | 11.34 | 16.38 | 4.82 | 16.04 | 4.92 | 15.66 | 4.46 | 16.36 | 4.20 | 15.66 | 6.22 |
| Female | 50 | 114.42 | 10.84 | 17.82 | 4.16 | 16.36 | 4.70 | 16.60 | 4.18 | 18.86 | 3.21 | 18.50 | 4.30 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 107 | 119.86 | 11.36 | 18.60 | 4.50 | 18.75 | 4.81 | 18.31 | 4.62 | 18.90 | 4.77 | 18.74 | 5.01 |
| Male | 55 | 120.46 | 12.08 | 18.40 | 5.08 | 19.31 | 4.96 | 18.45 | 5.04 | 18.58 | 5.55 | 17.45 | 5.04 |
| Female | 52 | 119.23 | 10.64 | 18.81 | 3.84 | 18.15 | 4.62 | 18.15 | 4.18 | 19.23 | 3.81 | 20.10 | 4.64 |

| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | |
|---------|----------------|------|-----------|------|----------------|------|-----------|------|----------------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1978-79 | | | | | | | | | | |
| Total | 17.66 | 4.48 | 17.41 | 5.73 | 16.73 | 4.68 | 18.58 | 5.32 | 18.88 | 5.86 |
| Male | 16.22 | 3.73 | 17.37 | 6.22 | 16.54 | 4.28 | 18.80 | 5.16 | 17.78 | 5.90 |
| Female | 19.07 | 4.73 | 17.45 | 5.28 | 16.93 | 5.08 | 18.36 | 5.53 | 19.95 | 5.69 |
| 1979-80 | | | | | | | | | | |
| Total | 17.68 | 4.36 | 16.49 | 5.41 | 16.51 | 4.58 | 19.99 | 4.22 | 17.23 | 5.07 |
| Male | 16.28 | 4.79 | 18.11 | 5.18 | 16.15 | 4.89 | 19.77 | 4.61 | 16.23 | 5.24 |
| Female | 19.00 | 3.45 | 14.98 | 5.23 | 16.84 | 4.29 | 20.20 | 3.85 | 18.16 | 4.76 |
| 1980-81 | | | | | | | | | | |
| Total | 19.12 | 4.64 | 16.89 | 5.77 | 17.64 | 4.98 | 19.92 | 4.33 | 19.30 | 5.51 |
| Male | 18.31 | 5.16 | 17.89 | 6.81 | 18.16 | 5.49 | 20.55 | 4.27 | 19.38 | 6.44 |
| Female | 19.98 | 3.88 | 15.83 | 4.22 | 17.08 | 4.37 | 19.25 | 4.33 | 19.21 | 4.37 |

Table 6.5. Adjusted Means in Educational Achievement for Three Successive Grade 10 PACE Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|-----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1978-79 | | | | | | | | | | | |
| Total | 83 | 18.15 | 17.90 | 17.56 | 17.94 | 17.04 | 17.09 | 17.45 | 16.77 | 18.61 | 18.92 |
| Male | 41 | 17.66 | 17.75 | 17.12 | 17.12 | 15.40 | 16.53 | 17.83 | 16.89 | 19.17 | 18.18 |
| Female | 42 | 18.64 | 18.05 | 18.00 | 18.75 | 18.64 | 18.83 | 17.09 | 16.65 | 18.07 | 19.64 |
| 1979-80 | | | | | | | | | | | |
| Total | 97 | 17.88 | 16.99 | 16.94 | 18.31 | 17.69 | 18.32 | 17.45 | 17.23 | 20.74 | 18.05 |
| Male | 47 | 17.13 | 16.83 | 16.46 | 17.02 | 16.22 | 16.91 | 19.05 | 16.87 | 20.52 | 17.06 |
| Female | 50 | 18.58 | 17.15 | 17.40 | 19.52 | 19.07 | 19.64 | 15.95 | 17.57 | 20.96 | 18.99 |
| 1980-81 | | | | | | | | | | | |
| Total | 107 | 17.89 | 18.01 | 17.56 | 18.28 | 18.21 | 18.52 | 15.99 | 16.96 | 19.21 | 18.52 |
| Male | 55 | 17.53 | 18.40 | 17.53 | 17.82 | 16.80 | 17.57 | 16.79 | 17.33 | 19.67 | 18.43 |
| Female | 52 | 18.27 | 17.59 | 17.58 | 18.76 | 19.69 | 19.52 | 15.15 | 16.56 | 18.71 | 18.62 |

Table 6.6. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Successive Grade 10
PACE Groups: Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 2881.43 | 2.18 | 78.78 | 3.24 | 11.76 | 22.37 |
| F | 245.11 | .19 | 6.70 | .28 | | |
| P | <.001 | .831 | .010 | .760 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 3152.26 | 29.04 | .25 | 10.60 | 14.00 | 26.11 |
| F | 225.11 | 2.07 | .02 | .76 | | |
| P | <.001 | .128 | .893 | .470 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 3235.65 | 12.35 | 27.85 | 6.34 | 10.04 | 22.26 |
| F | 322.15 | 1.23 | 2.77 | .63 | | |
| P | <.001 | .294 | .097 | .533 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 2194.68 | 3.55 | 202.07 | 15.63 | 11.45 | 20.11 |
| F | 191.60 | .31 | 64 | 1.37 | | |
| P | <.001 | .734 | .501 | .257 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 1611.72 | 35.18 | 635.20 | 1.05 | 19.24 | 27.47 |
| F | 83.77 | 1.83 | 33.02 | .06 | | |
| P | <.001 | .163 | <.001 | .947 | | |

Table 6.6. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 2065.19 | 18.05 | 383.56 | 3.85 | 11.62 | 20.57 |
| F | 177.67 | 1.55 | 33.00 | .33 | | |
| P | <.001 | .213 | <.001 | .718 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 4574.77 | 73.79 | 238.79 | 32.71 | 14.66 | 31.71 |
| F | 312.02 | 5.03 | 16.29 | 2.23 | | |
| P | <.001 | .007 | <.001 | .109 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 2645.51 | 4.60 | .75 | 13.90 | 13.40 | 22.78 |
| F | 197.46 | .34 | .06 | 1.04 | | |
| P | <.001 | .710 | .813 | .356 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 2885.76 | 109.22 | 20.88 | 17.37 | 10.99 | 21.42 |
| F | 262.67 | 9.94 | 1.90 | 1.58 | | |
| P | <.001 | <.001 | .169 | .208 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 280 | 286 |
| Mean Square | 3436.61 | 17.64 | 100.96 | 20.69 | 17.39 | 30.53 |
| F | 197.62 | 1.01 | 5.81 | 1.19 | | |
| P | <.001 | .364 | .017 | .306 | | |

Table 6.7. Mean Mental Ability and Mean Educational Achievement for Two Successive Grade 11 PACE Groups: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|----------------|-----------|-----------|---------------|----------------|------------|-----------|---------------|----------------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1979-80 | | | | | | | | | | | | | |
| Total | 71 | 116.15 | 12.49 | 19.11 | 5.99 | 18.28 | 5.75 | 18.44 | 5.76 | 17.80 | 5.23 | 17.66 | 5.54 |
| Male | 35 | 115.11 | 10.30 | 17.89 | 5.97 | 17.09 | 5.45 | 17.23 | 5.53 | 16.37 | 5.18 | 15.74 | 5.83 |
| Female | 36 | 117.17 | 14.38 | 20.31 | 5.84 | 19.44 | 5.86 | 19.61 | 5.80 | 19.19 | 4.97 | 19.53 | 4.60 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 95 | 114.32 | 10.95 | 18.72 | 4.51 | 19.17 | 4.45 | 18.56 | 4.52 | 19.12 | 4.28 | 19.13 | 4.89 |
| Male | 46 | 115.02 | 10.75 | 18.54 | 4.99 | 19.24 | 5.25 | 18.59 | 5.08 | 18.04 | 4.81 | 17.74 | 5.53 |
| Female | 49 | 113.65 | 11.21 | 18.88 | 4.06 | 19.10 | 3.60 | 18.53 | 3.98 | 20.12 | 3.48 | 20.43 | 3.81 |
| <hr/> | | | | | | | | | | | | | |
| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | | | | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | | | |
| 1979-80 | | | | | | | | | | | | | |
| Total | 17.93 | 5.18 | 18.54 | 6.56 | 18.39 | 5.79 | 20.15 | 5.33 | 19.10 | 6.75 | | | |
| Male | 16.20 | 5.02 | 18.49 | 6.86 | 17.63 | 6.26 | 19.80 | 5.89 | 17.83 | 7.37 | | | |
| Female | 19.61 | 4.83 | 18.58 | 6.35 | 19.14 | 5.28 | 20.50 | 4.78 | 20.33 | 5.93 | | | |
| 1980-81 | | | | | | | | | | | | | |
| Total | 19.45 | 4.41 | 18.68 | 5.45 | 17.84 | 4.70 | 20.03 | 3.83 | 19.41 | 6.78 | | | |
| Male | 18.15 | 5.07 | 20.11 | 5.42 | 18.37 | 5.07 | 21.04 | 4.09 | 18.72 | 5.25 | | | |
| Female | 20.67 | 3.30 | 17.35 | 5.18 | 17.35 | 4.32 | 19.08 | 3.34 | 20.06 | 4.25 | | | |

Table 6.8. Adjusted Means in Educational Achievement for Two Successive Grade 11 PACE Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1979-80 | | | | | | | | | | | |
| Total | 71 | 18.81 | 17.99 | 18.13 | 17.54 | 17.46 | 17.56 | 18.17 | 18.11 | 19.89 | 18.82 |
| Male | 35 | 17.88 | 17.08 | 17.23 | 16.37 | 15.74 | 16.37 | 18.48 | 17.63 | 19.80 | 17.83 |
| Female | 36 | 19.71 | 18.87 | 19.00 | 18.68 | 19.13 | 18.71 | 17.87 | 18.59 | 19.98 | 19.79 |
| 1980-81 | | | | | | | | | | | |
| Total | 95 | 18.94 | 19.39 | 18.79 | 19.31 | 19.28 | 19.30 | 18.95 | 18.05 | 20.23 | 19.62 |
| Male | 46 | 18.57 | 19.26 | 18.61 | 18.06 | 17.75 | 18.06 | 20.14 | 18.39 | 21.06 | 18.74 |
| Female | 49 | 19.30 | 19.51 | 18.96 | 20.48 | 20.71 | 20.46 | 17.85 | 17.74 | 19.43 | 20.44 |

Table 6.9. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Two Successive Grade 11 PACE Groups:
Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1826.72 | .72 | 66.38 | 12.26 | 15.45 | 26.83 |
| F | 118.25 | .05 | 4.30 | .79 | | |
| P | <.001 | .829 | .040 | .374 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1713.20 | 80.00 | 41.88 | 24.04 | 14.68 | 25.50 |
| F | 116.71 | 5.45 | 2.85 | 1.64 | | |
| P | <.001 | .021 | .093 | .202 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1908.65 | 18.07 | 45.84 | 20.74 | 13.85 | 25.69 |
| F | 137.83 | 1.31 | 3.31 | 1.50 | | |
| P | <.001 | .255 | .071 | .223 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1376.66 | 123.67 | 227.22 | .12 | 12.55 | 22.49 |
| F | 109.71 | 9.86 | 18.11 | .01 | | |
| P | <.001 | .002 | <.001 | .921 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 832.88 | 130.61 | 408.21 | 1.88 | 19.48 | 27.16 |
| F | 42.76 | 6.71 | 20.96 | .10 | | |
| P | <.001 | .010 | <.001 | .757 | | |

Table 6.9. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1195.96 | 149.89 | 338.32 | .09 | 13.38 | 23.05 |
| F | 89.35 | 11.20 | 25.28 | .01 | | |
| P | <.001 | .001 | <.001 | .935 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 2614.04 | 26.73 | 85.33 | 28.58 | 18.68 | 35.17 |
| F | 139.96 | 1.43 | 4.57 | 1.53 | | |
| P | <.001 | .233 | .034 | .218 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1588.91 | .07 | .94 | 26.35 | 17.23 | 26.91 |
| F | 92.24 | <.01 | .06 | 1.53 | | |
| P | <.001 | .949 | .816 | .218 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1432.52 | 5.58 | 20.93 | 32.37 | 11.40 | 20.42 |
| F | 125.64 | .49 | 1.84 | 2.84 | | |
| P | <.001 | .485 | .177 | .094 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 161 | 165 |
| Mean Square | 1532.46 | 24.77 | 136.60 | .68 | 22.69 | 32.38 |
| F | 67.55 | 1.09 | 6.02 | .03 | | |
| P | <.001 | .298 | .015 | .863 | | |

e 6.10. Mean Mental Ability and Mean Educational Achievement of One Grade 12 PACE Group: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|--------|----------------|-----------|-------|---------------|------|------------|------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| E | | | | | | | | | | | | | |
| 0-81 | | | | | | | | | | | | | |
| Total | 72 | 116.33 | 13.44 | 18.65 | 6.87 | 20.54 | 6.46 | 19.46 | 6.47 | 19.01 | 6.36 | 18.38 | 6.04 |
| Male | 35 | 115.77 | 11.48 | 17.77 | 7.58 | 20.03 | 6.80 | 18.63 | 7.02 | 17.51 | 6.71 | 16.69 | 6.01 |
| Female | 37 | 116.86 | 15.20 | 19.49 | 6.10 | 21.03 | 6.18 | 20.24 | 5.89 | 20.43 | 5.75 | 19.97 | 5.69 |

| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | |
|--------|----------------|------|-----------|------|----------------|------|-----------|------|----------------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| E | | | | | | | | | | |
| 0-81 | | | | | | | | | | |
| Total | 19.14 | 5.90 | 19.17 | 7.55 | 19.44 | 6.48 | 18.49 | 7.09 | 19.50 | 7.30 |
| Male | 17.46 | 6.00 | 19.83 | 7.84 | 19.00 | 6.76 | 17.89 | 8.09 | 18.66 | 7.42 |
| Female | 20.73 | 5.40 | 18.54 | 7.32 | 19.86 | 6.27 | 19.05 | 6.07 | 20.30 | 7.20 |

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6.11. Mean Mental Ability and Mean Educational Achievement for PACE Longitudinal Cohort 1: Cedarburg High School

| | Mental Ability | | | Comprehension | | | | | | | |
|---------|----------------|-----------|-------|---------------|------|-----------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| al | 61 | 116.28 | 13.23 | 15.92 | 5.33 | 18.10 | 5.39 | 19.25 | 6.37 | 19.08 | 6.66 |
| ile | 29 | 115.28 | 11.25 | 14.48 | 5.64 | 17.07 | 5.12 | 17.93 | 6.47 | 17.97 | 7.52 |
| emale | 32 | 117.19 | 14.92 | 17.22 | 4.75 | 19.03 | 5.54 | 20.44 | 6.13 | 20.09 | 5.70 |
| Quarter | | | | | | | | | | | |
| vest) | | | | | | | | | | | |
| al | 15 | 98.87 | 7.08 | 10.67 | 4.73 | 12.73 | 5.22 | 13.33 | 3.92 | 13.07 | 4.27 |
| ile | 6 | 97.67 | 5.75 | 7.00 | 3.90 | 10.50 | 3.94 | 12.33 | 2.50 | 9.67 | 1.86 |
| emale | 9 | 99.67 | 8.08 | 13.11 | 3.59 | 14.22 | 5.63 | 14.00 | 4.66 | 15.33 | 3.90 |
| Quarter | | | | | | | | | | | |
| al | 15 | 112.80 | 3.28 | 14.73 | 3.47 | 17.73 | 3.81 | 17.73 | 5.14 | 17.13 | 5.17 |
| ile | 8 | 112.63 | 3.46 | 13.75 | 3.33 | 17.13 | 3.14 | 16.50 | 5.58 | 15.75 | 6.27 |
| emale | 7 | 113.00 | 3.32 | 15.86 | 3.53 | 18.43 | 4.61 | 19.14 | 4.60 | 18.71 | 3.30 |
| Quarter | | | | | | | | | | | |
| al | 16 | 120.88 | 1.78 | 17.31 | 3.86 | 19.00 | 3.86 | 20.25 | 6.19 | 20.56 | 6.56 |
| ile | 10 | 121.00 | 2.05 | 16.70 | 4.35 | 18.50 | 4.25 | 19.20 | 7.30 | 21.10 | 7.22 |
| emale | 6 | 120.67 | 1.37 | 18.33 | 2.94 | 19.83 | 3.31 | 22.00 | 3.63 | 19.67 | 5.82 |
| Quarter | | | | | | | | | | | |
| ghest) | | | | | | | | | | | |
| al | 15 | 132.27 | 7.07 | 20.87 | 3.42 | 22.87 | 3.27 | 25.60 | 2.59 | 25.47 | 3.16 |
| ile | 5 | 129.20 | 3.35 | 20.20 | 1.79 | 22.00 | 2.45 | 24.40 | 1.95 | 25.20 | 1.48 |
| emale | 10 | 133.80 | 8.05 | 21.20 | 4.05 | 23.30 | 3.65 | 26.20 | 2.74 | 25.60 | 3.81 |

6.11. (Continued):

| Vocabulary | | | | | | | | |
|------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| al | 16.36 | 5.49 | 17.93 | 5.55 | 18.36 | 6.17 | 20.75 | 6.49 |
| ale | 15.38 | 5.16 | 17.10 | 5.32 | 16.83 | 5.92 | 19.69 | 7.33 |
| emale | 17.25 | 5.70 | 18.69 | 5.72 | 19.75 | 6.15 | 21.72 | 5.55 |
| Quarter | | | | | | | | |
| (west) | | | | | | | | |
| al | 11.73 | 4.79 | 12.40 | 4.78 | 12.27 | 5.68 | 16.00 | 6.18 |
| ale | 10.50 | 3.56 | 11.00 | 3.41 | 10.00 | 3.69 | 14.00 | 5.55 |
| emale | 12.56 | 5.50 | 13.33 | 5.50 | 13.78 | 6.44 | 17.33 | 6.52 |
| Quarter | | | | | | | | |
| al | 14.47 | 3.87 | 17.27 | 4.18 | 17.80 | 5.60 | 19.40 | 6.20 |
| ale | 13.38 | 4.00 | 15.13 | 3.80 | 15.13 | 5.82 | 16.75 | 6.61 |
| emale | 15.71 | 3.59 | 19.71 | 3.30 | 20.86 | 3.63 | 22.43 | 4.32 |
| Quarter | | | | | | | | |
| al | 17.00 | 3.29 | 19.06 | 3.26 | 19.44 | 2.90 | 21.69 | 6.01 |
| ale | 16.70 | 3.86 | 19.60 | 3.50 | 19.30 | 3.16 | 22.00 | 7.23 |
| emale | 17.50 | 2.26 | 18.17 | 2.86 | 19.67 | 2.66 | 21.17 | 3.71 |
| Quarter | | | | | | | | |
| (highest) | | | | | | | | |
| al | 22.20 | 3.97 | 22.93 | 4.32 | 23.87 | 4.09 | 25.87 | 3.16 |
| ale | 21.80 | 3.11 | 22.60 | 3.71 | 22.80 | 3.27 | 26.60 | 2.30 |
| emale | 22.40 | 4.48 | 23.10 | 4.77 | 24.40 | 4.50 | 25.50 | 3.57 |

Table 6.11. (Continued):

| | Reading Total | | | | | | | |
|-------------|---------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.62 | 5.04 | 17.49 | 5.20 | 18.61 | 6.16 | 19.79 | 6.47 |
| Male | 14.41 | 4.90 | 16.48 | 4.82 | 17.21 | 6.01 | 18.55 | 7.40 |
| Female | 16.72 | 4.99 | 18.41 | 5.45 | 19.88 | 6.10 | 20.91 | 5.38 |
| 1st Quarter | | | | | | | | |
| (Lowest) | | | | | | | | |
| Total | 11.07 | 3.47 | 12.00 | 4.36 | 12.60 | 4.26 | 14.00 | 4.41 |
| Male | 8.83 | 1.47 | 10.33 | 3.27 | 11.00 | 1.79 | 11.00 | 2.10 |
| Female | 12.56 | 3.68 | 13.11 | 4.81 | 13.67 | 5.15 | 16.00 | 4.47 |
| 2nd Quarter | | | | | | | | |
| Total | 13.67 | 3.09 | 16.87 | 3.18 | 17.40 | 5.03 | 17.73 | 5.30 |
| Male | 12.63 | 3.02 | 15.38 | 2.77 | 15.75 | 5.44 | 15.50 | 6.00 |
| Female | 14.86 | 2.91 | 18.57 | 2.88 | 19.29 | 4.07 | 20.29 | 3.04 |
| 3rd Quarter | | | | | | | | |
| Total | 16.50 | 3.46 | 18.31 | 3.05 | 19.50 | 4.83 | 21.38 | 6.11 |
| Male | 16.10 | 4.07 | 18.30 | 3.40 | 18.80 | 5.59 | 21.80 | 7.10 |
| Female | 17.17 | 2.32 | 18.33 | 2.66 | 20.67 | 3.33 | 20.67 | 4.50 |
| 4th Quarter | | | | | | | | |
| (Highest) | | | | | | | | |
| Total | 21.20 | 3.73 | 22.73 | 3.75 | 24.87 | 3.31 | 25.93 | 2.89 |
| Male | 20.60 | 1.95 | 22.00 | 2.00 | 23.80 | 2.05 | 26.00 | 1.22 |
| Female | 21.50 | 4.43 | 23.10 | 4.43 | 25.40 | 3.78 | 25.90 | 3.51 |

Table 6.11. (Continued):

| | Usage | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.66 | 4.59 | 17.70 | 4.66 | 18.02 | 5.45 | 19.26 | 6.43 |
| Male | 14.17 | 4.01 | 16.69 | 4.20 | 16.55 | 5.41 | 17.14 | 7.09 |
| Female | 17.00 | 4.72 | 18.63 | 4.92 | 19.34 | 5.23 | 21.19 | 5.16 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 11.73 | 5.08 | 13.20 | 4.18 | 13.07 | 5.57 | 14.73 | 6.17 |
| Male | 9.50 | 2.95 | 12.17 | 2.04 | 11.50 | 4.51 | 9.83 | 3.87 |
| Female | 13.22 | 5.78 | 13.89 | 5.16 | 14.11 | 6.21 | 18.00 | 5.22 |
| 2nd Quarter | | | | | | | | |
| Total | 14.53 | 3.07 | 16.67 | 3.33 | 17.27 | 4.71 | 17.67 | 5.18 |
| Male | 13.00 | 2.33 | 15.75 | 4.20 | 15.13 | 5.14 | 15.25 | 5.55 |
| Female | 16.29 | 2.98 | 17.71 | 1.70 | 19.71 | 2.81 | 20.43 | 3.15 |
| 3rd Quarter | | | | | | | | |
| Total | 16.13 | 2.39 | 19.38 | 3.48 | 19.00 | 3.50 | 20.31 | 6.88 |
| Male | 15.50 | 2.80 | 18.60 | 3.66 | 18.20 | 4.26 | 20.30 | 7.33 |
| Female | 17.17 | .98 | 20.67 | 3.01 | 20.33 | .82 | 20.33 | 6.71 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 20.20 | 2.96 | 21.47 | 3.18 | 22.67 | 3.15 | 24.27 | 2.99 |
| Male | 19.00 | 2.35 | 19.80 | 1.92 | 21.60 | 3.36 | 22.60 | 2.97 |
| Female | 20.80 | 3.16 | 22.30 | 3.43 | 23.20 | 3.08 | 25.10 | 2.77 |

Table 6.11. (Continued):

| | Spelling | | | | | | | |
|-------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.87 | 5.05 | 17.39 | 5.28 | 17.95 | 5.76 | 18.75 | 6.08 |
| Male | 13.90 | 4.37 | 15.52 | 4.89 | 16.07 | 6.15 | 16.62 | 6.47 |
| Female | 17.66 | 5.02 | 19.09 | 5.11 | 19.66 | 4.87 | 20.69 | 5.07 |
| 1st Quarter | | | | | | | | |
| (Lowest) | | | | | | | | |
| Total | 12.33 | 3.92 | 14.07 | 4.08 | 15.00 | 5.40 | 16.13 | 5.40 |
| Male | 12.00 | 3.46 | 14.67 | 4.46 | 15.33 | 6.89 | 15.50 | 5.72 |
| Female | 12.56 | 4.39 | 13.67 | 4.03 | 14.78 | 4.60 | 16.56 | 5.48 |
| 2nd Quarter | | | | | | | | |
| Total | 16.20 | 5.80 | 17.20 | 6.46 | 17.33 | 6.75 | 17.60 | 7.56 |
| Male | 13.63 | 5.68 | 14.38 | 6.70 | 15.00 | 8.00 | 13.63 | 7.61 |
| Female | 19.14 | 4.67 | 20.43 | 4.72 | 20.00 | 4.00 | 22.14 | 4.53 |
| 3rd Quarter | | | | | | | | |
| Total | 15.69 | 4.13 | 16.88 | 3.88 | 16.88 | 4.40 | 18.38 | 5.58 |
| Male | 13.70 | 3.68 | 15.30 | 3.74 | 15.50 | 4.95 | 17.20 | 6.25 |
| Female | 19.00 | 2.37 | 19.50 | 2.59 | 19.17 | 1.94 | 20.33 | 3.98 |
| 4th Quarter | | | | | | | | |
| (Highest) | | | | | | | | |
| Total | 19.27 | 4.03 | 21.47 | 3.89 | 22.67 | 3.44 | 22.93 | 3.35 |
| Male | 17.00 | 3.74 | 18.80 | 3.90 | 19.80 | 4.09 | 21.60 | 3.29 |
| Female | 20.40 | 3.84 | 22.80 | 3.29 | 24.10 | 2.02 | 23.60 | 3.34 |

Table 6.11. (Continued):

| | Language Total | | | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.82 | 4.35 | 17.72 | 4.54 | 18.21 | 5.38 | 19.41 | 5.99 |
| Male | 14.17 | 3.62 | 16.34 | 3.84 | 16.48 | 5.22 | 17.21 | 6.43 |
| Female | 17.31 | 4.47 | 18.97 | 4.81 | 19.78 | 5.10 | 21.41 | 4.84 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 12.07 | 4.04 | 13.67 | 3.90 | 14.00 | 5.03 | 15.73 | 5.31 |
| Male | 11.00 | 2.61 | 13.33 | 2.07 | 13.33 | 4.93 | 12.83 | 4.40 |
| Female | 12.78 | 4.79 | 13.89 | 4.88 | 14.44 | 5.34 | 17.67 | 5.17 |
| 2nd Quarter | | | | | | | | |
| Total | 15.27 | 3.58 | 17.00 | 4.02 | 17.40 | 5.14 | 17.93 | 5.84 |
| Male | 13.38 | 3.54 | 15.38 | 4.80 | 15.25 | 5.70 | 14.63 | 6.09 |
| Female | 17.13 | 2.23 | 18.86 | 1.77 | 19.86 | 3.24 | 21.71 | 2.21 |
| 3rd Quarter | | | | | | | | |
| Total | 16.06 | 2.89 | 18.38 | 2.94 | 18.25 | 4.02 | 19.69 | 6.22 |
| Male | 14.80 | 2.74 | 17.30 | 2.83 | 17.00 | 4.62 | 19.10 | 6.79 |
| Female | 18.17 | 1.72 | 20.17 | 2.32 | 20.33 | 1.37 | 20.67 | 5.57 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 19.87 | 3.16 | 21.80 | 3.32 | 23.20 | 2.91 | 24.27 | 2.79 |
| Male | 18.00 | 2.92 | 19.60 | 2.88 | 21.20 | 3.03 | 22.80 | 2.49 |
| Female | 20.80 | 2.97 | 22.90 | 3.07 | 24.20 | 2.39 | 25.00 | 2.75 |

Table 6.11. (Continued):

| | Math | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 13.85 | 5.10 | 17.34 | 5.50 | 18.66 | 6.73 | 19.16 | 7.39 |
| Male | 14.34 | 4.55 | 17.31 | 6.08 | 18.62 | 7.12 | 19.41 | 8.06 |
| Female | 13.41 | 5.59 | 17.38 | 5.02 | 18.69 | 6.47 | 18.94 | 6.84 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 9.73 | 4.15 | 11.87 | 3.38 | 13.00 | 5.83 | 13.33 | 6.20 |
| Male | 9.33 | 2.16 | 11.00 | 3.85 | 11.67 | 6.22 | 10.50 | 6.72 |
| Female | 10.00 | 5.20 | 12.44 | 3.13 | 13.89 | 5.75 | 15.22 | 5.38 |
| 2nd Quarter | | | | | | | | |
| Total | 11.80 | 3.93 | 15.60 | 3.83 | 15.73 | 4.79 | 15.87 | 5.26 |
| Male | 13.50 | 3.42 | 15.75 | 4.56 | 16.25 | 6.27 | 16.63 | 6.74 |
| Female | 9.86 | 3.76 | 15.43 | 3.15 | 15.14 | 2.61 | 15.00 | 3.16 |
| 3rd Quarter | | | | | | | | |
| Total | 15.44 | 4.05 | 19.38 | 4.41 | 20.56 | 4.91 | 21.06 | 6.88 |
| Male | 16.70 | 4.64 | 20.10 | 5.28 | 21.30 | 5.60 | 23.10 | 5.43 |
| Female | 13.33 | 1.37 | 18.17 | 2.32 | 19.33 | 3.61 | 17.67 | 8.19 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 18.33 | 3.77 | 22.40 | 3.91 | 25.20 | 4.23 | 26.27 | 3.26 |
| Male | 17.00 | 2.92 | 21.80 | 5.63 | 25.40 | 2.88 | 27.20 | 2.77 |
| Female | 19.00 | 4.11 | 22.70 | 3.06 | 25.10 | 4.91 | 25.80 | 3.52 |

Table 6.11. (Continued):

| | Social Studies | | | | | | | |
|-----------------------|----------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.59 | 5.37 | 16.87 | 4.94 | 18.67 | 6.07 | 19.72 | 6.43 |
| Male | 14.00 | 5.42 | 16.38 | 4.75 | 17.93 | 6.61 | 18.83 | 7.00 |
| Female | 15.13 | 5.36 | 17.31 | 5.15 | 19.34 | 5.55 | 20.53 | 5.87 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 9.33 | 4.78 | 11.33 | 3.79 | 13.80 | 4.20 | 14.87 | 4.75 |
| Male | 7.17 | 3.97 | 10.50 | 2.59 | 13.33 | 2.73 | 13.17 | 4.36 |
| Female | 10.78 | 4.92 | 11.89 | 4.48 | 14.11 | 5.09 | 16.00 | 4.90 |
| 2nd Quarter | | | | | | | | |
| Total | 13.53 | 3.29 | 16.33 | 2.77 | 17.87 | 5.14 | 18.53 | 6.02 |
| Male | 12.88 | 2.42 | 16.50 | 2.62 | 17.50 | 6.00 | 17.38 | 7.58 |
| Female | 14.29 | 4.15 | 16.14 | 3.13 | 18.29 | 4.39 | 19.86 | 3.72 |
| 3rd Quarter | | | | | | | | |
| Total | 15.19 | 2.93 | 18.69 | 3.89 | 18.56 | 6.53 | 19.81 | 6.43 |
| Male | 15.40 | 3.50 | 17.50 | 4.50 | 18.00 | 8.14 | 20.30 | 6.88 |
| Female | 14.83 | 1.83 | 20.67 | 1.21 | 19.50 | 2.66 | 19.00 | 6.13 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 20.27 | 3.88 | 21.00 | 3.36 | 24.47 | 2.42 | 25.67 | 3.09 |
| Male | 21.20 | 2.39 | 21.00 | 3.16 | 24.00 | 2.45 | 25.00 | 2.55 |
| Female | 19.80 | 4.49 | 21.00 | 3.62 | 24.70 | 2.50 | 26.00 | 3.40 |

Table 6.11. (Continued):

| | Science | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 16.00 | 5.41 | 18.33 | 5.21 | 20.31 | 5.51 | 18.54 | 6.87 |
| Male | 15.31 | 5.96 | 18.21 | 5.26 | 19.93 | 6.20 | 17.41 | 8.08 |
| Female | 16.63 | 4.86 | 18.44 | 5.25 | 20.66 | 4.88 | 19.56 | 5.00 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.73 | 4.96 | 12.87 | 5.22 | 15.53 | 4.94 | 12.73 | 4.50 |
| Male | 7.50 | 3.62 | 11.83 | 6.05 | 14.17 | 5.49 | 9.17 | 2.64 |
| Female | 12.89 | 4.68 | 13.56 | 4.85 | 16.44 | 4.64 | 15.11 | 3.89 |
| 2nd Quarter | | | | | | | | |
| Total | 14.47 | 4.60 | 17.87 | 3.98 | 18.33 | 4.86 | 17.27 | 6.56 |
| Male | 14.00 | 4.90 | 17.88 | 4.16 | 18.63 | 6.61 | 15.63 | 8.05 |
| Female | 15.00 | 4.55 | 17.86 | 4.10 | 18.00 | 2.00 | 19.14 | 4.14 |
| 3rd Quarter | | | | | | | | |
| Total | 18.63 | 3.05 | 20.13 | 3.20 | 22.06 | 4.42 | 19.88 | 7.08 |
| Male | 18.50 | 3.78 | 20.40 | 3.27 | 22.00 | 5.16 | 20.40 | 8.02 |
| Female | 18.83 | 1.47 | 19.67 | 3.33 | 22.17 | 3.25 | 19.00 | 5.76 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 20.00 | 3.51 | 22.33 | 3.04 | 25.20 | 1.82 | 24.20 | 3.36 |
| Male | 20.40 | 2.30 | 22.00 | 1.58 | 24.80 | 1.10 | 24.20 | 1.30 |
| Female | 19.80 | 4.08 | 22.50 | 3.63 | 25.40 | 2.12 | 24.20 | 4.10 |

Table 6.11. (Continued):

| | Use of Sources | | | | | | | |
|-----------------------|----------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.77 | 4.93 | 18.89 | 6.10 | 18.95 | 6.86 | 19.33 | 7.51 |
| Male | 14.62 | 5.80 | 17.45 | 6.10 | 17.69 | 7.44 | 17.83 | 7.68 |
| Female | 16.81 | 3.80 | 20.19 | 5.89 | 20.09 | 6.19 | 20.69 | 7.20 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 11.13 | 3.80 | 13.27 | 5.55 | 14.00 | 6.32 | 13.53 | 6.75 |
| Male | 8.00 | 3.16 | 10.83 | 2.93 | 11.50 | 5.39 | 12.00 | 5.66 |
| Female | 13.22 | 2.59 | 14.89 | 6.41 | 15.67 | 6.63 | 14.56 | 7.54 |
| 2nd Quarter | | | | | | | | |
| Total | 14.60 | 4.07 | 17.73 | 4.45 | 16.60 | 5.61 | 17.27 | 6.31 |
| Male | 13.75 | 4.80 | 16.63 | 4.69 | 16.50 | 6.82 | 14.75 | 7.85 |
| Female | 15.57 | 3.10 | 19.00 | 4.12 | 17.14 | 4.34 | 20.14 | 1.68 |
| 3rd Quarter | | | | | | | | |
| Total | 17.44 | 4.38 | 20.38 | 5.41 | 20.00 | 6.53 | 19.88 | 7.03 |
| Male | 16.90 | 5.43 | 18.80 | 6.11 | 18.80 | 7.57 | 19.70 | 6.72 |
| Female | 18.33 | 1.75 | 23.00 | 2.76 | 22.00 | 4.15 | 20.17 | 8.18 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 19.80 | 2.78 | 24.07 | 3.28 | 24.93 | 3.71 | 26.60 | 2.38 |
| Male | 19.40 | 2.70 | 24.00 | 1.41 | 24.80 | 3.70 | 26.00 | 1.22 |
| Female | 20.00 | 2.94 | 24.10 | 3.98 | 25.00 | 3.92 | 26.90 | 2.81 |

Table 6.12. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for PACE Longitudinal Cohort 1: Cedarbury High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 275.61 | 1289.14 | 32.39 | 47.94 | 138.83 | 2.09 | 6.36 | 9.30 | 9.37 |
| F | 5.75 | 26.89 | .68 | | 14.82 | .22 | .68 | .99 | |
| P | .020 | <.001 | .571 | | <.001 | .881 | .727 | .448 | |
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 206.88 | 1121.06 | 74.08 | 60.09 | 192.14 | 6.34 | 5.42 | 4.53 | 7.66 |
| F | 3.44 | 18.66 | 1.23 | | 25.08 | .83 | .71 | .59 | |
| P | .069 | <.001 | .307 | | <.001 | .481 | .702 | .803 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 248.49 | 1275.87 | 39.03 | 49.73 | 177.93 | 1.05 | 5.64 | 5.10 | 5.14 |
| F | 5.00 | 25.65 | .78 | | 34.59 | .20 | 1.10 | .99 | |
| P | .030 | <.001 | .508 | | <.001 | .893 | .368 | .450 | |
| <u>Usage</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 466.13 | 809.33 | 23.00 | 45.82 | 118.73 | 9.30 | 4.17 | 10.72 | 7.20 |
| F | 10.17 | 17.66 | .50 | | 16.50 | 1.29 | .58 | 1.49 | |
| P | .002 | <.001 | .683 | | <.001 | .279 | .813 | .156 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 683.48 | 406.82 | 98.26 | 73.54 | 84.81 | 1.20 | 4.68 | 5.86 | 5.08 |
| F | 9.29 | 5.53 | 1.34 | | 16.70 | .24 | .92 | 1.15 | |
| P | .004 | .002 | .272 | | <.001 | .871 | .508 | .328 | |

Table 6.12. (Continued)

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 560.62 | 633.16 | 20.43 | 49.58 | 123.56 | 4.76 | 2.33 | 6.97 | 4.44 |
| F | 11.31 | 12.77 | .41 | | 27.82 | 1.97 | .52 | 1.57 | |
| P | .001 | <.001 | .745 | | <.001 | .363 | .855 | .129 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 18.78 | 1331.90 | 81.85 | 52.45 | 335.61 | 3.98 | 16.70 | 10.55 | 11.40 |
| F | .36 | 25.39 | 1.56 | | 29.46 | .35 | 1.47 | .93 | |
| P | .552 | <.001 | .210 | | <.001 | .790 | .165 | .504 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 57.77 | 1084.78 | 10.66 | 50.63 | 284.50 | .61 | 9.35 | 10.01 | 9.77 |
| F | 1.14 | 21.43 | .21 | | 29.12 | .06 | .96 | 1.02 | |
| P | .290 | <.001 | .889 | | <.001 | .980 | .478 | .422 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 73.43 | 1101.12 | 51.53 | 55.53 | 131.62 | 8.64 | 8.32 | 7.78 | 8.67 |
| F | 1.32 | 19.83 | .93 | | 20.94 | 1.00 | .96 | .90 | |
| P | .255 | <.001 | .434 | | <.001 | .396 | .476 | .529 | |
| <u>Use of Sources</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 53 | 3 | 3 | 9 | 9 | 159 |
| Mean Square | 313.24 | 1248.71 | 29.32 | 64.49 | 166.90 | .98 | 12.35 | 9.88 | 12.93 |
| F | 4.86 | 19.36 | .45 | | 12.91 | .08 | .96 | .76 | |
| P | .032 | <.001 | .715 | | <.001 | .973 | .009 | .650 | |

Table 6.13. Mean Mental Ability and Mean Educational Achievement for PACE Longitudinal Cohort 2: Cedarburg High School

| | Mental Ability | | | Comprehension | | | | | |
|-----------------------|----------------|-----------|-------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | Grade 9 | | Grade 10 | | Grade 11 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 87 | 115.00 | 10.79 | 14.57 | 3.59 | 17.05 | 4.52 | 18.80 | 4.53 |
| Male | 44 | 115.84 | 10.19 | 14.57 | 3.86 | 16.64 | 4.81 | 18.75 | 4.96 |
| Female | 43 | 114.14 | 11.43 | 14.58 | 3.33 | 17.47 | 4.23 | 18.86 | 4.10 |
| 1st Quarter (Lowest) | | | | | | | | | |
| Total | 22 | 102.23 | 4.19 | 12.36 | 3.36 | 14.09 | 3.15 | 15.68 | 3.14 |
| Male | 9 | 102.00 | 3.39 | 11.67 | 3.87 | 12.44 | 1.24 | 15.33 | 2.40 |
| Female | 13 | 102.38 | 4.79 | 12.85 | 3.02 | 15.23 | 3.59 | 15.92 | 3.64 |
| 2nd Quarter | | | | | | | | | |
| Total | 22 | 110.64 | 2.74 | 14.09 | 2.93 | 16.05 | 3.99 | 18.09 | 3.35 |
| Male | 10 | 110.20 | 2.66 | 13.90 | 3.67 | 15.50 | 5.06 | 17.20 | 4.56 |
| Female | 12 | 111.00 | 2.86 | 14.25 | 2.30 | 16.50 | 3.00 | 18.83 | 3.27 |
| 3rd Quarter | | | | | | | | | |
| Total | 22 | 118.64 | 2.52 | 15.18 | 2.61 | 17.45 | 2.96 | 19.72 | 4.22 |
| Male | 13 | 118.69 | 2.63 | 14.85 | 2.64 | 17.15 | 3.48 | 19.23 | 4.94 |
| Female | 9 | 118.56 | 2.51 | 15.67 | 2.65 | 17.89 | 2.09 | 20.44 | 3.05 |
| 4th Quarter (Highest) | | | | | | | | | |
| Total | 21 | 129.14 | 6.57 | 16.76 | 4.02 | 20.76 | 5.13 | 21.86 | 4.55 |
| Male | 12 | 127.87 | 5.69 | 17.00 | 3.86 | 20.17 | 5.06 | 22.06 | 4.85 |
| Female | 9 | 130.89 | 7.57 | 16.44 | 4.45 | 21.56 | 5.41 | 21.56 | 4.39 |

Table 6.13. (Continued):

| | Vocabulary | | | | | |
|--------------------------|------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.08 | 4.37 | 16.07 | 4.67 | 19.37 | 4.37 |
| Male | 15.27 | 4.60 | 16.34 | 4.74 | 19.52 | 4.90 |
| Female | 14.88 | 4.16 | 15.79 | 4.64 | 19.21 | 3.81 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 13.27 | 3.71 | 13.27 | 4.43 | 16.55 | 3.69 |
| Male | 12.56 | 2.46 | 14.56 | 3.36 | 15.78 | 4.02 |
| Female | 13.77 | 4.40 | 12.38 | 4.98 | 17.08 | 3.56 |
| 2nd Quarter | | | | | | |
| Total | 14.23 | 3.20 | 14.77 | 4.35 | 18.68 | 3.20 |
| Male | 15.00 | 3.20 | 13.20 | 4.83 | 17.90 | 3.81 |
| Female | 13.58 | 3.20 | 16.08 | 3.60 | 19.33 | 2.57 |
| 3rd Quarter | | | | | | |
| Total | 15.95 | 3.12 | 16.95 | 3.42 | 20.09 | 3.69 |
| Male | 16.23 | 3.24 | 17.54 | 3.57 | 20.41 | 4.07 |
| Female | 15.56 | 3.09 | 16.11 | 3.18 | 19.78 | 3.27 |
| 4th Quarter (Highest) | | | | | | |
| Total | 16.95 | 6.14 | 19.43 | 4.24 | 22.29 | 4.91 |
| Male | 16.50 | 7.05 | 19.00 | 5.06 | 22.83 | 5.06 |
| Female | 17.56 | 5.00 | 20.00 | 3.00 | 21.56 | 4.90 |

Table 6.11. (Continued):

| | Reading Total | | | | | |
|-------------|---------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD |
| Total | 14.15 | 3.90 | 16.03 | 4.25 | 18.67 | 4.59 |
| Male | 14.32 | 3.74 | 15.93 | 4.41 | 18.77 | 5.02 |
| Female | 13.98 | 3.35 | 16.14 | 4.12 | 18.56 | 4.15 |
| 1st Quarter | | | | | | |
| (Lowest) | | | | | | |
| Total | 12.16 | 2.91 | 13.27 | 2.86 | 15.45 | 3.17 |
| Male | 11.44 | 2.74 | 12.89 | 1.83 | 15.00 | 2.45 |
| Female | 12.69 | 3.01 | 13.54 | 3.45 | 15.77 | 3.66 |
| 2nd Quarter | | | | | | |
| Total | 13.31 | 2.71 | 14.95 | 3.44 | 17.86 | 3.67 |
| Male | 13.60 | 3.31 | 14.00 | 3.89 | 17.10 | 4.15 |
| Female | 13.08 | 2.23 | 15.75 | 2.96 | 18.50 | 3.26 |
| 3rd Quarter | | | | | | |
| Total | 14.77 | 2.27 | 16.32 | 3.08 | 19.68 | 3.94 |
| Male | 14.85 | 2.34 | 16.46 | 3.41 | 19.46 | 4.63 |
| Female | 14.67 | 2.20 | 16.11 | 2.71 | 20.00 | 2.92 |
| 4th Quarter | | | | | | |
| (Highest) | | | | | | |
| Total | 16.43 | 4.57 | 17.76 | 4.71 | 21.81 | 5.01 |
| Male | 16.50 | 4.64 | 17.25 | 5.03 | 22.25 | 5.36 |
| Female | 16.33 | 4.74 | 18.44 | 4.45 | 21.22 | 4.94 |

Table 6.13. (Continued):

| | Usage | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD |
| Total | 16.14 | 3.97 | 17.55 | 3.86 | 19.30 | 4.26 |
| Male | 15.34 | 3.72 | 16.59 | 4.24 | 18.32 | 4.69 |
| Female | 16.95 | 4.10 | 18.53 | 3.19 | 20.30 | 3.56 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 13.18 | 3.58 | 15.32 | 3.86 | 16.68 | 3.83 |
| Male | 11.78 | 3.53 | 13.00 | 4.06 | 15.00 | 4.82 |
| Female | 14.15 | 3.41 | 16.92 | 2.87 | 17.95 | 2.58 |
| 2nd Quarter | | | | | | |
| Total | 15.86 | 3.34 | 16.73 | 3.71 | 17.73 | 3.55 |
| Male | 14.90 | 2.92 | 15.60 | 4.70 | 17.10 | 3.90 |
| Female | 16.67 | 3.58 | 17.67 | 2.46 | 20.09 | 2.68 |
| 3rd Quarter | | | | | | |
| Total | 17.82 | 3.40 | 19.05 | 2.52 | 20.66 | 4.24 |
| Male | 16.23 | 2.59 | 18.15 | 1.95 | 19.12 | 4.57 |
| Female | 20.11 | 3.22 | 20.33 | 2.78 | 22.11 | 3.41 |
| 4th Quarter (Highest) | | | | | | |
| Total | 17.76 | 3.87 | 19.19 | 4.00 | 21.24 | 4.11 |
| Male | 17.42 | 3.82 | 18.42 | 4.27 | 20.42 | 4.08 |
| Female | 18.22 | 4.12 | 20.22 | 3.56 | 22.33 | 4.12 |

6.13. (Continued):

| | Grade 9 | | Spelling Grade 10 | | Grade 11 | |
|------------------|-----------|------|----------------------|------|-----------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| e ale | 15.39 | 5.01 | 17.11 | 5.36 | 19.22 | 4.84 |
| | 14.18 | 5.66 | 16.09 | 6.11 | 18.02 | 5.43 |
| | 16.63 | 3.93 | 18.16 | 4.29 | 20.44 | 3.83 |
| Quarter (st) | | | | | | |
| | 14.32 | 5.68 | 15.14 | 5.68 | 17.95 | 5.03 |
| | 12.67 | 7.78 | 12.89 | 6.97 | 15.56 | 6.37 |
| e ale | 15.46 | 3.55 | 16.69 | 4.21 | 19.62 | 3.15 |
| Quarter | | | | | | |
| | 13.23 | 4.63 | 15.86 | 4.44 | 17.36 | 4.02 |
| | 10.50 | 3.72 | 14.40 | 4.45 | 15.10 | 2.77 |
| e ale | 15.50 | 4.15 | 17.08 | 4.23 | 19.25 | 4.00 |
| Quarter | | | | | | |
| | 16.27 | 3.25 | 18.23 | 5.09 | 19.91 | 4.70 |
| | 15.15 | 3.39 | 17.15 | 5.97 | 19.08 | 5.35 |
| e ale | 17.89 | 2.37 | 19.78 | 3.15 | 21.11 | 3.52 |
| Quarter (est) | | | | | | |
| | 17.86 | 5.18 | 19.33 | 5.39 | 21.76 | 4.58 |
| | 17.33 | 5.60 | 18.75 | 5.94 | 21.17 | 4.86 |
| e ale | 18.56 | 4.80 | 20.11 | 4.78 | 22.56 | 4.33 |

Table 6.13. (Continued):

| | Language Total | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.85 | 3.88 | 17.60 | 4.24 | 19.59 | 4.39 |
| Male | 14.89 | 4.09 | 16.59 | 4.78 | 18.43 | 5.00 |
| Female | 16.84 | 3.42 | 18.63 | 3.37 | 20.77 | 3.31 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 13.64 | 3.96 | 15.41 | 4.33 | 17.55 | 4.27 |
| Male | 12.11 | 4.91 | 13.00 | 5.12 | 15.44 | 5.62 |
| Female | 14.69 | 2.90 | 17.08 | 2.81 | 19.00 | 2.31 |
| 2nd Quarter | | | | | | |
| Total | 14.68 | 3.20 | 16.55 | 3.36 | 18.41 | 3.65 |
| Male | 12.90 | 2.81 | 15.30 | 3.89 | 16.30 | 3.30 |
| Female | 16.17 | 2.79 | 17.58 | 2.57 | 20.17 | 3.01 |
| 3rd Quarter | | | | | | |
| Total | 17.27 | 3.10 | 18.95 | 3.33 | 20.59 | 4.33 |
| Male | 15.92 | 2.93 | 18.00 | 3.49 | 19.62 | 4.84 |
| Female | 19.22 | 2.28 | 20.33 | 2.69 | 22.00 | 3.20 |
| 4th Quarter (Highest) | | | | | | |
| Total | 17.90 | 3.71 | 19.57 | 4.64 | 21.90 | 4.13 |
| Male | 17.50 | 3.68 | 18.83 | 4.95 | 21.17 | 4.39 |
| Female | 18.44 | 3.91 | 20.56 | 4.28 | 22.89 | 3.79 |

Table 6.13. (Continued):

| | Grade 9 | | Math Grade 10 | | Grade 11 | |
|--------------------------|-----------|------|------------------|------|-----------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.03 | 4.46 | 16.56 | 5.44 | 18.99 | 5.54 |
| Male | 15.14 | 4.63 | 18.48 | 5.07 | 20.36 | 5.38 |
| Female | 12.91 | 4.03 | 14.60 | 5.15 | 17.58 | 5.40 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 10.82 | 2.97 | 12.09 | 3.10 | 15.56 | 4.01 |
| Male | 10.89 | 2.37 | 13.00 | 3.24 | 17.00 | 2.60 |
| Female | 10.77 | 3.42 | 11.46 | 2.96 | 14.54 | 4.58 |
| 2nd Quarter | | | | | | |
| Total | 12.41 | 2.58 | 14.45 | 4.08 | 16.45 | 3.78 |
| Male | 13.50 | 2.37 | 16.90 | 3.45 | 17.40 | 4.53 |
| Female | 11.50 | 2.47 | 12.42 | 3.48 | 15.67 | 2.99 |
| 3rd Quarter | | | | | | |
| Total | 15.55 | 3.96 | 18.59 | 3.71 | 20.27 | 3.98 |
| Male | 16.15 | 4.60 | 20.15 | 3.31 | 21.62 | 3.69 |
| Female | 14.67 | 2.83 | 16.33 | 3.16 | 18.33 | 3.74 |
| 4th Quarter (Highest) | | | | | | |
| Total | 17.52 | 4.83 | 21.33 | 5.46 | 23.90 | 6.01 |
| Male | 18.58 | 4.54 | 22.08 | 5.18 | 24.00 | 6.56 |
| Female | 16.11 | 5.11 | 20.33 | 5.98 | 23.78 | 5.56 |

Table 6.13. (Continued):

| | Social Studies | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.98 | 4.05 | 16.56 | 4.44 | 17.98 | 4.76 |
| Male | 12.64 | 4.67 | 16.66 | 4.56 | 18.52 | 5.02 |
| Female | 13.33 | 3.34 | 16.47 | 4.36 | 17.42 | 4.46 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 11.50 | 3.20 | 13.86 | 4.11 | 15.09 | 3.58 |
| Male | 10.00 | 2.35 | 11.89 | 1.76 | 14.22 | 1.99 |
| Female | 12.54 | 3.38 | 15.73 | 4.75 | 15.69 | 4.35 |
| 2nd Quarter | | | | | | |
| Total | 11.82 | 3.66 | 15.00 | 3.77 | 16.95 | 4.52 |
| Male | 11.90 | 4.63 | 15.50 | 3.75 | 17.60 | 4.43 |
| Female | 11.75 | 2.83 | 14.58 | 3.90 | 16.42 | 4.72 |
| 3rd Quarter | | | | | | |
| Total | 13.23 | 4.41 | 17.36 | 3.70 | 19.14 | 4.00 |
| Male | 12.08 | 4.89 | 17.23 | 3.81 | 19.38 | 4.46 |
| Female | 14.89 | 3.14 | 17.56 | 3.75 | 18.78 | 3.46 |
| 4th Quarter (Highest) | | | | | | |
| Total | 15.48 | 3.87 | 20.19 | 3.53 | 20.86 | 5.00 |
| Male | 15.83 | 4.45 | 20.58 | 3.82 | 21.58 | 5.57 |
| Female | 15.00 | 3.12 | 19.67 | 3.24 | 19.89 | 4.26 |

Table 6.13. (Continued):

| | Science | | | | | |
|-----------------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.92 | 4.57 | 19.94 | 4.22 | 20.25 | 3.81 |
| Male | 16.84 | 4.52 | 19.98 | 4.57 | 21.22 | 4.00 |
| Female | 14.98 | 4.47 | 19.91 | 3.88 | 19.26 | 3.37 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 12.36 | 4.52 | 16.23 | 3.31 | 17.05 | 2.68 |
| Male | 12.78 | 5.02 | 14.67 | 2.69 | 17.11 | 2.47 |
| Female | 12.08 | 4.33 | 17.31 | 3.35 | 17.00 | 2.92 |
| 2nd Quarter | | | | | | |
| Total | 16.05 | 2.66 | 19.55 | 3.46 | 20.05 | 2.77 |
| Male | 16.70 | 2.91 | 19.60 | 3.20 | 20.70 | 3.06 |
| Female | 15.50 | 2.43 | 19.50 | 3.80 | 19.50 | 2.50 |
| 3rd Quarter | | | | | | |
| Total | 17.18 | 4.12 | 21.32 | 3.46 | 21.23 | 3.65 |
| Male | 18.54 | 2.57 | 22.00 | 4.12 | 22.85 | 2.88 |
| Female | 15.22 | 5.24 | 20.33 | 2.90 | 18.89 | 3.48 |
| 4th Quarter (Highest) | | | | | | |
| Total | 18.19 | 4.68 | 22.81 | 3.72 | 22.81 | 3.68 |
| Male | 18.17 | 5.34 | 22.08 | 4.06 | 23.00 | 4.55 |
| Female | 18.22 | 3.93 | 23.78 | 3.19 | 22.56 | 2.30 |

Table 6.13. (Continued):

| | Use of Sources | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 16.94 | 5.01 | 17.30 | 4.89 | 19.54 | 4.90 |
| Male | 15.93 | 5.01 | 16.75 | 4.95 | 18.84 | 5.32 |
| Female | 17.98 | 4.84 | 17.86 | 4.82 | 20.26 | 4.37 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 13.55 | 3.96 | 13.45 | 4.27 | 16.59 | 4.21 |
| Male | 11.22 | 2.22 | 11.22 | 1.99 | 15.22 | 3.56 |
| Female | 15.15 | 4.16 | 15.00 | 4.80 | 17.54 | 4.48 |
| 2nd Quarter | | | | | | |
| Total | 15.50 | 4.65 | 16.50 | 3.81 | 19.27 | 4.46 |
| Male | 14.30 | 4.72 | 16.00 | 2.91 | 17.90 | 4.28 |
| Female | 16.50 | 4.54 | 16.92 | 4.52 | 20.42 | 4.46 |
| 3rd Quarter | | | | | | |
| Total | 18.59 | 3.92 | 18.60 | 4.03 | 20.91 | 3.21 |
| Male | 17.23 | 3.88 | 17.92 | 4.42 | 20.08 | 3.01 |
| Female | 20.56 | 3.24 | 19.56 | 3.40 | 22.11 | 3.26 |
| 4th Quarter (Highest) | | | | | | |
| Total | 20.29 | 4.77 | 20.81 | 4.42 | 21.48 | 6.10 |
| Male | 19.42 | 4.93 | 20.25 | 4.90 | 21.00 | 7.62 |
| Female | 21.44 | 4.56 | 21.56 | 3.84 | 22.11 | 3.52 |

Table 6.14. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for PACE Longitudinal Cohort 2: Cedarburg High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 49.81 | 387.76 | 5.36 | 31.02 | 386.54 | 6.01 | 7.68 | 3.33 | 5.76 |
| F | 1.51 | 12.50 | .17 | | 67.09 | 1.04 | 1.33 | .58 | |
| P | .209 | <.001 | .914 | | <.001 | .355 | .245 | .747 | |
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | .85 | 318.51 | 9.30 | 41.40 | 413.26 | .22 | 6.77 | 19.00 | 4.62 |
| F | .02 | 7.69 | .22 | | 89.39 | .05 | 1.46 | 4.11 | |
| P | .886 | <.001 | .879 | | <.001 | .954 | .194 | .001 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 12.46 | 377.80 | 4.13 | 34.83 | 436.51 | 2.72 | 8.13 | 4.52 | 2.85 |
| F | .36 | 10.85 | .12 | | 153.38 | .95 | 2.86 | 1.59 | |
| P | .551 | <.001 | .949 | | <.001 | .387 | .011 | .154 | |
| <u>Usage</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 373.03 | 321.78 | 7.48 | 28.18 | 208.96 | .75 | 1.87 | 3.69 | 4.69 |
| F | 13.24 | 11.42 | .27 | | 44.59 | .16 | .40 | .79 | |
| P | <.001 | <.001 | .850 | | <.001 | .853 | .878 | .581 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 506.86 | 303.15 | 21.92 | 56.06 | 306.76 | .66 | 4.38 | 3.31 | 5.24 |
| F | 9.04 | 5.41 | .39 | | 58.59 | .13 | .84 | .63 | |
| P | .004 | .002 | .760 | | <.001 | .881 | .543 | .704 | |

Table 6.14. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 453.82 | 313.39 | 11.56 | 34.44 | 291.52 | .75 | .86 | 2.80 | 3.05 |
| F | 13.18 | 9.10 | .34 | | 95.51 | .25 | .28 | .92 | |
| P | <.001 | <.001 | .800 | | <.001 | .781 | .945 | .485 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 284.61 | 774.20 | 10.09 | 36.86 | 534.91 | 10.65 | 10.35 | 7.89 | 6.02 |
| F | 7.72 | 21.00 | .27 | | 88.92 | 1.77 | 1.72 | 1.31 | |
| P | .007 | <.001 | .844 | | <.001 | .174 | .119 | .235 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 7.75 | 362.74 | 42.89 | 32.99 | 551.15 | 13.70 | 7.49 | 3.43 | 7.20 |
| F | .23 | 11.00 | 1.30 | | 76.54 | 1.90 | 1.04 | .48 | |
| P | .629 | <.001 | .280 | | <.001 | .153 | .402 | .825 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 30.50 | 425.03 | 43.49 | 26.50 | 490.09 | 28.44 | 3.19 | 1.56 | 5.85 |
| F | 1.15 | 16.04 | 1.64 | | 83.84 | 4.87 | .55 | .27 | |
| P | .287 | <.001 | .187 | | <.001 | .009 | .773 | .952 | |
| <u>Use of Sources</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 79 | 2 | 2 | 6 | 6 | 158 |
| Mean Square | 324.62 | 557.23 | 10.17 | 40.23 | 166.15 | 6.02 | 10.25 | 2.50 | 7.40 |
| F | 8.07 | 13.85 | .25 | | 22.46 | .81 | 1.39 | .34 | |
| P | .006 | <.001 | .859 | | <.001 | .445 | .223 | .916 | |

300

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Table 6.15. Adjusted Means in Educational Achievement for PACE Longitudinal Cohorts 1 and 2: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|----------|----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| Cohort 1 | | | | | | | | | | | |
| Total | 61 | 17.55 | 17.35 | 17.03 | 16.95 | 16.92 | 17.09 | 16.39 | 16.52 | 18.02 | 17.66 |
| Male | 29 | 16.56 | 16.51 | 16.11 | 15.86 | 15.21 | 15.72 | 16.83 | 16.17 | 17.88 | 16.66 |
| Female | 32 | 18.45 | 18.12 | 17.87 | 17.94 | 18.47 | 18.32 | 15.99 | 16.85 | 18.14 | 18.57 |
| Cohort 2 | | | | | | | | | | | |
| Total | 87 | 16.95 | 16.98 | 16.43 | 17.78 | 17.35 | 17.79 | 16.69 | 15.97 | 18.84 | 18.08 |
| Male | 44 | 16.57 | 16.96 | 16.25 | 16.68 | 16.04 | 16.57 | 17.90 | 15.86 | 19.27 | 17.09 |
| Female | 43 | 17.34 | 17.00 | 16.61 | 19.92 | 18.69 | 19.05 | 15.45 | 16.08 | 18.41 | 19.09 |

Table 6.16. Tests of Significance (ANCOVA) of Differences in Educational Achievement and Comparison of Gains for PACE Longitudinal Cohort and Cohort 2: Cedarburg High School

| Source | Year(Y) | Sex(S) | S X Y | Covariate | Gain(G) | G X Y | G X S | G X Y X S | Error |
|----------------------|---------|--------|-------|-----------|---------|-------|-------|-----------|-------|
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 32.34 | 190.33 | 32.78 | 4466.64 | 521.66 | 7.55 | .07 | 6.31 | 6.86 |
| F | 1.22 | 7.19 | 1.24 | 168.71 | 76.02 | 1.10 | .01 | .02 | |
| P | .271 | .008 | .268 | <.001 | <.001 | .334 | .989 | .400 | |
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 11.84 | 73.30 | 66.77 | 4338.33 | 354.77 | 84.47 | 5.90 | 3.26 | 5.51 |
| F | .34 | 2.12 | 1.93 | 125.59 | 64.40 | 15.33 | 1.07 | .59 | |
| P | .559 | .147 | .167 | <.001 | <.001 | <.001 | .344 | .544 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 33.36 | 121.22 | 53.60 | 4671.56 | 502.53 | 28.24 | .56 | 3.41 | 3.36 |
| F | 1.20 | 4.37 | 1.93 | 168.26 | 149.54 | 8.40 | .17 | 1.01 | |
| P | .275 | .038 | .167 | <.001 | <.001 | <.001 | .348 | .364 | |
| <u>Usage</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 86.97 | 500.19 | .83 | 3370.51 | 279.47 | 19.06 | 1.84 | 3.48 | 4.78 |
| F | 3.78 | 21.76 | .04 | 146.62 | 58.49 | 3.99 | .38 | .73 | |
| P | .054 | <.001 | .849 | <.001 | <.001 | .020 | .681 | .484 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 29.06 | 938.44 | 9.87 | 2435.16 | 314.07 | 32.62 | .71 | .25 | 4.62 |
| F | .58 | 18.87 | .20 | 48.96 | 68.04 | 7.07 | .15 | .06 | |
| P | .446 | <.001 | .657 | <.001 | <.001 | <.001 | .857 | .946 | |

Table 6.16. (Continued):

| Source | Year(Y) | Sex(S) | S X Y | Covariate | Gain(G) | G X Y | G X S | G X Y X S | Error |
|-----------------------|---------|--------|-------|-----------|---------|-------|-------|-----------|-------|
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 67.20 | 693.38 | .28 | 3087.47 | 340.35 | 24.71 | 2.13 | .83 | 2.86 |
| F | 2.42 | 24.93 | .01 | 111.02 | 119.20 | 8.65 | .75 | .29 | |
| P | .122 | <.001 | .921 | <.001 | <.001 | <.001 | .475 | .748 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 7.27 | 291.30 | 68.97 | 5521.51 | 862.36 | 13.03 | 2.70 | 15.84 | 7.94 |
| F | .23 | 9.13 | 2.16 | 172.98 | 108.63 | 1.64 | .34 | 2.00 | |
| P | .634 | .003 | .144 | <.001 | <.001 | .196 | .712 | .138 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 29.96 | 21.78 | 5.23 | 3945.25 | 756.68 | 15.92 | 5.38 | 10.06 | 7.71 |
| F | 1.02 | .74 | .18 | 134.54 | 98.19 | 2.07 | .70 | 1.30 | |
| P | .314 | .390 | .673 | <.001 | <.001 | .129 | .498 | .273 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 73.02 | 9.66 | 33.49 | 4132.91 | 721.68 | 33.50 | 4.43 | 21.27 | 6.19 |
| F | 2.85 | .38 | 1.31 | 161.18 | 116.55 | 5.41 | .72 | 3.43 | |
| P | .094 | .540 | .255 | <.001 | <.001 | .005 | .490 | .034 | |
| <u>Use of Sources</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 288 |
| Mean Square | 23.74 | 410.60 | .16 | 4686.60 | 301.78 | 75.24 | .49 | 4.94 | 8.53 |
| F | .65 | 11.27 | .01 | 128.69 | 35.36 | 8.82 | .06 | .58 | |
| P | .421 | <.001 | .947 | <.001 | <.001 | <.001 | .945 | .561 | |

Table 6.17. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 9 Traditional Groups: Cedarburg High School

| | N | Mental Ability | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|-----|----------------|-------|---------------|------|------------|------|---------------|------|-----------|------|-----------|------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | | | | | |
| Total | 173 | 112.03 | 11.51 | 13.46 | 4.67 | 14.20 | 5.08 | 13.23 | 4.21 | 13.85 | 4.40 | 12.02 | 5.20 |
| Male | 102 | 112.15 | 12.47 | 13.25 | 4.51 | 14.15 | 4.93 | 13.07 | 4.07 | 13.16 | 4.69 | 11.09 | 5.07 |
| Female | 71 | 111.86 | 10.06 | 13.76 | 4.90 | 14.27 | 5.32 | 13.46 | 4.42 | 14.85 | 3.74 | 13.35 | 5.12 |
| 1978-79 | | | | | | | | | | | | | |
| Total | 158 | 113.91 | 10.45 | 13.77 | 4.16 | 15.59 | 4.51 | 14.07 | 3.80 | 15.53 | 4.14 | 13.94 | 5.01 |
| Male | 69 | 113.65 | 11.40 | 13.06 | 4.39 | 15.71 | 4.51 | 13.81 | 4.00 | 14.32 | 3.73 | 12.57 | 5.19 |
| Female | 89 | 114.11 | 9.72 | 14.31 | 3.91 | 15.51 | 4.53 | 14.27 | 3.66 | 16.46 | 4.22 | 15.00 | 4.62 |
| 1979-80 | | | | | | | | | | | | | |
| Total | 171 | 112.86 | 11.46 | 14.46 | 3.97 | 14.06 | 4.58 | 13.66 | 3.68 | 14.82 | 3.73 | 13.74 | 4.86 |
| Male | 84 | 112.63 | 11.63 | 13.99 | 3.54 | 13.83 | 5.03 | 13.32 | 3.57 | 13.65 | 3.42 | 12.12 | 3.96 |
| Female | 87 | 113.08 | 11.35 | 14.92 | 4.31 | 14.29 | 4.10 | 13.99 | 3.77 | 15.95 | 3.69 | 15.31 | 5.14 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 143 | 114.30 | 13.44 | 14.24 | 4.80 | 15.50 | 4.89 | 14.30 | 4.51 | 13.83 | 4.82 | 14.62 | 5.61 |
| Male | 71 | 113.63 | 14.04 | 13.76 | 4.91 | 15.20 | 4.59 | 13.89 | 4.34 | 12.70 | 4.91 | 13.17 | 5.66 |
| Female | 72 | 114.96 | 12.88 | 14.72 | 4.68 | 15.79 | 5.19 | 14.71 | 4.67 | 14.93 | 4.51 | 16.04 | 5.22 |

| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | |
|---------|----------------|------|-----------|------|----------------|------|-----------|------|----------------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | | |
| Total | 13.04 | 4.31 | 12.78 | 4.83 | 12.53 | 4.48 | 14.07 | 5.35 | 13.40 | 5.24 |
| Male | 12.24 | 4.39 | 13.24 | 4.96 | 12.54 | 4.50 | 14.50 | 5.47 | 13.11 | 5.21 |
| Female | 14.20 | 3.94 | 12.13 | 4.59 | 12.52 | 4.47 | 13.45 | 5.15 | 13.83 | 5.29 |
| 1978-79 | | | | | | | | | | |
| Total | 14.92 | 4.03 | 13.09 | 3.99 | 12.67 | 3.82 | 14.70 | 4.84 | 16.36 | 4.75 |
| Male | 13.59 | 3.77 | 13.78 | 4.62 | 12.94 | 4.05 | 15.09 | 5.05 | 15.52 | 4.96 |
| Female | 15.94 | 3.94 | 12.55 | 3.35 | 12.46 | 3.63 | 14.40 | 4.68 | 17.01 | 4.50 |
| 1979-80 | | | | | | | | | | |
| Total | 14.40 | 3.82 | 12.64 | 4.41 | 12.97 | 3.97 | 16.09 | 4.56 | 16.39 | 5.51 |
| Male | 12.99 | 3.16 | 12.99 | 4.38 | 12.70 | 4.16 | 16.24 | 4.96 | 15.77 | 5.58 |
| Female | 15.76 | 3.92 | 12.31 | 4.44 | 13.23 | 3.78 | 15.94 | 4.16 | 16.98 | 5.41 |
| 1980-81 | | | | | | | | | | |
| Total | 14.30 | 5.07 | 13.41 | 4.83 | 13.65 | 4.25 | 14.56 | 5.70 | 16.39 | 5.37 |
| Male | 12.93 | 5.19 | 13.85 | 5.21 | 13.30 | 4.28 | 14.90 | 5.97 | 15.03 | 5.64 |
| Female | 15.65 | 4.59 | 12.97 | 4.42 | 14.00 | 4.22 | 14.22 | 5.44 | 17.74 | 4.75 |

Table 6.18. Mean Mental Ability and Mean Educational Achievement for Three Successive Grade 10 Traditional Groups: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|----------------|-----------|-------|---------------|------|------------|------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1978-79 | | | | | | | | | | | | | |
| Total | 162 | 112.08 | 11.83 | 14.99 | 4.97 | 16.25 | 5.02 | 15.08 | 4.70 | 15.28 | 5.41 | 14.57 | 5.28 |
| Male | 95 | 112.63 | 12.67 | 15.05 | 4.83 | 16.61 | 4.59 | 15.24 | 4.53 | 14.37 | 5.77 | 13.73 | 5.54 |
| Female | 67 | 111.30 | 10.56 | 14.91 | 5.18 | 15.73 | 5.56 | 14.85 | 4.97 | 16.58 | 4.58 | 15.78 | 4.65 |
| 1979-80 | | | | | | | | | | | | | |
| Total | 150 | 113.58 | 10.58 | 16.32 | 4.85 | 16.24 | 4.58 | 15.73 | 4.46 | 16.68 | 3.86 | 15.67 | 4.55 |
| Male | 64 | 113.42 | 11.16 | 15.97 | 4.86 | 16.09 | 4.84 | 15.56 | 4.52 | 15.98 | 3.71 | 14.41 | 4.17 |
| Female | 86 | 113.70 | 10.20 | 16.58 | 4.85 | 16.35 | 4.39 | 15.86 | 4.43 | 17.20 | 3.91 | 16.60 | 4.61 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 166 | 112.99 | 11.44 | 15.33 | 4.52 | 16.86 | 4.42 | 15.55 | 4.32 | 16.12 | 4.74 | 15.63 | 5.68 |
| Male | 82 | 112.44 | 11.77 | 13.94 | 4.46 | 16.52 | 4.61 | 14.59 | 4.35 | 14.48 | 4.09 | 13.52 | 5.37 |
| Female | 84 | 113.52 | 11.16 | 16.69 | 4.17 | 17.18 | 4.24 | 16.49 | 4.10 | 17.73 | 4.81 | 17.68 | 5.23 |

| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | |
|---------|----------------|------|-----------|------|----------------|------|-----------|------|----------------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1978-79 | | | | | | | | | | |
| Total | 15.00 | 5.00 | 14.76 | 5.25 | 14.10 | 5.10 | 16.42 | 5.52 | 14.62 | 5.88 |
| Male | 14.07 | 5.40 | 15.51 | 5.28 | 14.58 | 5.11 | 17.05 | 5.50 | 14.08 | 6.30 |
| Female | 16.31 | 4.05 | 13.70 | 5.07 | 13.42 | 5.05 | 15.52 | 5.47 | 15.46 | 5.16 |
| 1979-80 | | | | | | | | | | |
| Total | 16.35 | 3.82 | 14.92 | 5.32 | 15.23 | 4.90 | 18.48 | 4.64 | 16.52 | 4.93 |
| Male | 15.36 | 3.40 | 15.70 | 6.10 | 15.22 | 5.26 | 19.28 | 5.05 | 16.34 | 5.24 |
| Female | 17.09 | 3.97 | 14.34 | 4.61 | 15.23 | 4.65 | 17.88 | 4.24 | 16.65 | 4.71 |
| 1980-81 | | | | | | | | | | |
| Total | 16.07 | 4.89 | 14.56 | 4.52 | 15.27 | 4.82 | 16.42 | 4.92 | 16.14 | 5.65 |
| Male | 14.16 | 4.19 | 14.82 | 4.72 | 14.83 | 4.99 | 16.33 | 5.22 | 15.29 | 6.40 |
| Female | 17.93 | 4.83 | 14.31 | 4.33 | 15.70 | 4.64 | 16.50 | 4.63 | 16.98 | 4.69 |

Table 6.19. Mean Mental Ability and Mean Educational Achievement for Two Successive Grade 11 Traditional Groups: Cedarburg High School

| | Mental Ability | | | Comprehension | | Vocabulary | | Reading Total | | Usage | | Spelling | |
|---------|----------------|-----------|-----------|---------------|----------------|------------|-----------|---------------|----------------|-----------|------|-----------|------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1979-80 | | | | | | | | | | | | | |
| Total | 154 | 111.64 | 11.57 | 15.40 | 5.47 | 15.88 | 5.47 | 15.21 | 5.15 | 14.29 | 5.73 | 15.49 | 5.87 |
| Male | 95 | 111.97 | 12.20 | 14.99 | 5.59 | 15.72 | 5.55 | 14.95 | 5.21 | 13.43 | 5.73 | 14.39 | 6.18 |
| Female | 59 | 111.12 | 10.57 | 16.05 | 5.25 | 16.14 | 5.37 | 15.63 | 5.06 | 15.66 | 5.50 | 17.25 | 4.90 |
| 1980-81 | | | | | | | | | | | | | |
| Total | 138 | 113.94 | 10.62 | 17.38 | 5.06 | 19.03 | 4.64 | 17.80 | 4.82 | 18.12 | 4.81 | 18.07 | 5.04 |
| Male | 58 | 113.34 | 11.29 | 17.19 | 5.89 | 18.76 | 5.00 | 17.62 | 5.58 | 16.62 | 4.95 | 16.22 | 4.80 |
| Female | 80 | 114.38 | 10.16 | 17.53 | 4.39 | 19.23 | 4.38 | 17.93 | 4.22 | 19.20 | 4.42 | 19.41 | 4.81 |
| | | | | | | | | | | | | | |
| | Language Total | | Math | | Social Studies | | Science | | Use of Sources | | | | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | | | |
| 1979-80 | | | | | | | | | | | | | |
| Total | 14.96 | 5.29 | 14.53 | 6.65 | 14.65 | 6.14 | 17.31 | 6.57 | 14.47 | 6.72 | | | |
| Male | 13.97 | 5.57 | 14.97 | 6.71 | 14.53 | 6.27 | 17.27 | 7.03 | 13.53 | 6.86 | | | |
| Female | 16.56 | 4.41 | 13.81 | 6.55 | 14.85 | 5.96 | 17.36 | 5.82 | 16.00 | 6.25 | | | |
| 1980-81 | | | | | | | | | | | | | |
| Total | 18.43 | 4.67 | 16.49 | 5.49 | 16.81 | 4.79 | 18.86 | 5.49 | 18.06 | 5.94 | | | |
| Male | 16.74 | 4.62 | 16.74 | 6.47 | 17.00 | 5.64 | 19.83 | 6.37 | 16.72 | 6.44 | | | |
| Female | 19.65 | 4.34 | 16.30 | 4.70 | 16.68 | 4.11 | 18.16 | 4.67 | 19.03 | 5.38 | | | |

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Table 6.20. Adjusted Means in Educational Achievement for Four Successive Grade 9 Traditional Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|-----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1977-78 | | | | | | | | | | | |
| Total | 173 | 13.72 | 14.49 | 13.50 | 14.11 | 12.26 | 13.30 | 13.08 | 12.76 | 14.38 | 13.72 |
| Male | 102 | 13.48 | 14.41 | 13.31 | 13.39 | 11.30 | 12.47 | 13.51 | 12.75 | 14.77 | 13.40 |
| Female | 71 | 14.06 | 14.61 | 13.77 | 15.15 | 13.63 | 14.50 | 12.48 | 12.78 | 13.80 | 14.20 |
| 1978-79 | | | | | | | | | | | |
| Total | 158 | 13.61 | 15.42 | 13.91 | 15.37 | 13.80 | 14.76 | 12.91 | 12.53 | 14.52 | 16.17 |
| Male | 69 | 12.96 | 15.60 | 13.71 | 14.22 | 12.48 | 13.50 | 13.67 | 12.86 | 14.97 | 15.40 |
| Female | 89 | 14.12 | 15.28 | 14.07 | 16.26 | 14.82 | 15.75 | 12.32 | 12.29 | 14.17 | 16.77 |
| 1979-80 | | | | | | | | | | | |
| Total | 171 | 14.54 | 14.15 | 13.74 | 14.90 | 13.81 | 14.48 | 12.73 | 13.04 | 16.18 | 16.48 |
| Male | 84 | 14.11 | 13.98 | 13.45 | 13.78 | 12.24 | 13.12 | 13.14 | 12.81 | 16.39 | 15.93 |
| Female | 87 | 14.95 | 14.32 | 14.02 | 15.98 | 15.34 | 15.79 | 12.34 | 13.26 | 15.98 | 17.01 |
| 1980-81 | | | | | | | | | | | |
| Total | 143 | 14.01 | 15.22 | 14.05 | 13.58 | 14.40 | 14.06 | 13.13 | 13.44 | 14.28 | 16.10 |
| Male | 71 | 13.67 | 15.09 | 13.79 | 12.61 | 13.08 | 12.84 | 13.74 | 13.21 | 14.79 | 14.91 |
| Female | 72 | 14.34 | 15.35 | 14.31 | 14.54 | 15.69 | 15.27 | 12.52 | 13.66 | 13.77 | 17.27 |

Table 6.21. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 9 Traditional Groups:
Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|---------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 4157.22 | 29.90 | 104.01 | 2.54 | 12.76 | 19.44 |
| F | 325.84 | 2.34 | 8.15 | .20 | | |
| P | <.001 | .072 | .004 | .897 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 5552.87 | 58.20 | 2.23 | 3.52 | 14.17 | 23.16 |
| F | 391.93 | 4.11 | .16 | .25 | | |
| P | <.001 | .007 | .691 | .863 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 4522.31 | 7.36 | 35.76 | .33 | 9.33 | 16.49 |
| F | 484.60 | .79 | 3.83 | .04 | | |
| P | <.001 | .501 | .051 | .991 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 4341.80 | 80.38 | 621.30 | 1.49 | 10.47 | 18.66 |
| F | 415.23 | 7.69 | 59.42 | .14 | | |
| P | <.001 | <.001 | <.001 | .935 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 3583.02 | 102.33 | 1064.27 | 5.51 | 19.35 | 27.43 |
| F | 185.14 | 5.29 | 54.99 | .29 | | |
| P | <.001 | <.001 | <.001 | .836 | | |

Table 6.21. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 4244.88 | 41.98 | 870.35 | 3.15 | 10.46 | 18.92 |
| F | 405.98 | 4.02 | 83.24 | .30 | | |
| P | <.001 | .008 | <.001 | .824 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 5795.66 | 4.23 | 190.86 | 2.36 | 11.28 | 20.47 |
| F | 513.72 | .38 | 16.92 | .21 | | |
| P | <.001 | .771 | <.001 | .890 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 3274.89 | 21.10 | 1.26 | 8.97 | 12.06 | 17.23 |
| F | 271.56 | 1.75 | .10 | .74 | | |
| P | <.001 | .156 | .747 | .526 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 5867.59 | 138.12 | 101.96 | 3.16 | 16.99 | 26.62 |
| F | 345.31 | 8.13 | 6.00 | .19 | | |
| P | <.001 | <.001 | .015 | .906 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 636 | 644 |
| Mean Square | 6378.31 | 247.99 | 310.31 | 17.16 | 16.83 | 28.94 |
| F | 378.97 | 14.74 | 18.44 | 1.02 | | |
| P | <.001 | <.001 | <.001 | .383 | | |

Table 6.22. Adjusted Means in Educational Achievement for Three Successive Grade 10 Traditional Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|-----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1978-79 | | | | | | | | | | | |
| Total | 162 | 15.19 | 16.44 | 15.28 | 15.48 | 14.73 | 15.19 | 14.99 | 14.28 | 16.62 | 14.87 |
| Male | 95 | 15.11 | 16.67 | 15.30 | 14.43 | 13.77 | 14.13 | 15.58 | 14.63 | 17.11 | 14.15 |
| Female | 67 | 15.30 | 16.11 | 15.25 | 16.98 | 16.10 | 16.69 | 14.17 | 13.79 | 15.93 | 15.90 |
| 1979-80 | | | | | | | | | | | |
| Total | 150 | 16.14 | 16.07 | 15.55 | 16.50 | 15.52 | 16.18 | 14.71 | 15.06 | 18.29 | 16.32 |
| Male | 64 | 15.83 | 15.96 | 15.42 | 15.84 | 14.29 | 15.23 | 15.54 | 15.09 | 19.14 | 16.19 |
| Female | 86 | 16.38 | 16.15 | 15.65 | 16.99 | 16.44 | 16.89 | 14.09 | 15.04 | 17.67 | 16.42 |
| 1980-81 | | | | | | | | | | | |
| Total | 166 | 15.30 | 16.83 | 15.52 | 16.09 | 15.60 | 16.04 | 14.52 | 15.24 | 16.38 | 16.11 |
| Male | 82 | 14.04 | 16.63 | 14.69 | 14.58 | 13.61 | 14.26 | 14.94 | 14.93 | 16.44 | 15.41 |
| Female | 84 | 16.53 | 17.02 | 16.32 | 17.56 | 17.54 | 17.77 | 14.11 | 15.54 | 16.33 | 16.79 |

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Table 6.23. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Three Grade 10 Traditional Groups:
Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3669.29 | 37.40 | 134.59 | 61.77 | 14.54 | 23.05 |
| F | 252.36 | 2.58 | 9.26 | 4.25 | | |
| P | <.001 | .077 | .002 | .015 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3491.58 | 23.32 | .01 | 10.00 | 14.56 | 21.89 |
| F | 239.80 | 1.60 | <.001 | .69 | | |
| P | <.001 | .203 | .982 | .504 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3926.25 | 3.15 | 42.30 | 32.68 | 11.71 | 20.21 |
| F | 335.22 | .27 | 3.61 | 2.79 | | |
| P | <.001 | .764 | .058 | .062 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3850.64 | 19.32 | 579.36 | 35.18 | 12.95 | 22.62 |
| F | 297.34 | 1.49 | 44.74 | 2.72 | | |
| P | <.001 | .226 | <.001 | .067 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 2527.16 | 17.14 | 917.99 | 38.95 | 19.73 | 27.26 |
| F | 128.07 | .87 | 46.52 | 1.97 | | |
| P | <.001 | .420 | <.001 | .140 | | |

Table 6.23. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3460.91 | 20.65 | 779.37 | 33.17 | 12.29 | 21.61 |
| F | 201.61 | 1.68 | 63.42 | 2.70 | | |
| P | <.001 | .187 | <.001 | .068 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 5378.81 | 5.44 | 176.84 | 4.78 | 13.68 | 25.24 |
| F | 393.28 | .40 | 12.93 | .35 | | |
| P | <.001 | .672 | <.001 | .71 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 3365.97 | 47.83 | 1.03 | 21.63 | 17.31 | 24.63 |
| F | 194.41 | 2.76 | .06 | 1.25 | | |
| P | <.001 | .064 | .808 | .288 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 4129.65 | 192.31 | 99.49 | 20.38 | 16.59 | 26.30 |
| F | 248.90 | 11.59 | 6.00 | 1.23 | | |
| P | <.001 | <.001 | .015 | .294 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 2 | 1 | 2 | 471 | 477 |
| Mean Square | 4680.54 | 73.42 | 147.15 | 23.65 | 20.32 | 30.94 |
| F | 230.30 | 3.61 | 7.24 | 1.16 | | |
| P | <.001 | .028 | .007 | .313 | | |

Table 6.24. Adjusted Means in Educational Achievement for Two Successive Grade 11 Traditional Groups: Cedarburg High School

| | N | Comprehension | Vocabulary | Reading Total | Usage | Spelling | Language Total | Math | Social Studies | Science | Use of Sources |
|---------|-----|---------------|------------|------------------|-------|----------|-------------------|-------|-------------------|---------|----------------|
| 1979-80 | | | | | | | | | | | |
| Total | 154 | 15.68 | 16.17 | 15.51 | 14.55 | 15.70 | 14.53 | 14.91 | 14.91 | 17.59 | 14.77 |
| Male | 95 | 15.19 | 15.92 | 15.16 | 13.61 | 14.54 | 13.60 | 15.24 | 14.71 | 17.47 | 13.74 |
| Female | 59 | 16.48 | 16.57 | 16.08 | 16.05 | 17.57 | 16.03 | 14.39 | 15.23 | 17.78 | 16.44 |
| 1980-81 | | | | | | | | | | | |
| Total | 138 | 17.06 | 18.70 | 17.46 | 17.82 | 17.83 | 17.84 | 16.06 | 16.52 | 18.54 | 17.72 |
| Male | 58 | 17.03 | 18.59 | 17.45 | 16.47 | 16.10 | 16.48 | 16.52 | 16.85 | 19.67 | 16.55 |
| Female | 80 | 17.09 | 18.78 | 17.46 | 18.81 | 19.09 | 18.83 | 15.72 | 16.28 | 17.73 | 18.57 |

Table 6.25. Tests of Significance(ANCOVA) of Differences in Educational Achievement for Two Successive Grade 11 Traditional Groups: Cedarburg High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Comprehension</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2520.88 | 103.51 | 31.80 | 26.15 | 19.21 | 28.75 |
| F | 131.26 | 5.39 | 1.66 | 1.36 | | |
| P | <.001 | .021 | .199 | .244 | | |
| <u>Vocabulary</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2573.21 | 413.86 | 12.27 | 3.64 | 17.19 | 28.33 |
| F | 149.69 | 24.08 | .71 | .21 | | |
| P | <.001 | <.001 | .399 | .646 | | |
| <u>Reading Total</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2836.18 | 232.79 | 15.23 | 14.26 | 15.29 | 26.57 |
| F | 185.52 | 15.23 | 1.00 | .93 | | |
| P | <.001 | <.001 | .319 | .335 | | |
| <u>Usage</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2066.41 | 545.57 | 396.90 | .18 | 19.90 | 31.79 |
| F | 103.82 | 27.41 | 19.94 | .01 | | |
| P | <.001 | <.001 | <.001 | .925 | | |
| <u>Spelling</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 1420.77 | 163.13 | 632.79 | .05 | 23.36 | 31.80 |
| F | 60.82 | 6.98 | 27.09 | <.01 | | |
| P | <.001 | .009 | <.001 | .965 | | |

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Table 6.25. (Continued):

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|-----------------------|-----------|---------|--------|-------|----------|-------|
| <u>Language Total</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 1830.40 | 401.38 | 520.79 | .20 | 17.13 | 28.01 |
| F | 186.85 | 23.43 | 30.40 | .01 | | |
| P | <.001 | <.001 | <.001 | .914 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 4532.81 | 118.07 | 48.18 | .04 | 22.02 | 38.45 |
| F | 205.81 | 5.36 | 2.19 | <.01 | | |
| P | <.001 | .021 | .140 | .968 | | |
| <u>Social Studies</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2062.64 | 176.06 | .04 | 20.99 | 23.83 | 31.79 |
| F | 86.54 | 7.39 | <.01 | .88 | | |
| P | <.001 | .007 | .968 | .349 | | |
| <u>Science</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2454.96 | 79.85 | 46.44 | 87.47 | 28.55 | 37.52 |
| F | 86.00 | 2.80 | 1.63 | 3.06 | | |
| P | <.001 | .096 | .203 | .081 | | |
| <u>Use of Sources</u> | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 287 | 291 |
| Mean Square | 2735.89 | 422.70 | 390.14 | 8.35 | 29.96 | 43.54 |
| F | 91.33 | 14.11 | 13.02 | .28 | | |
| P | <.001 | <.001 | <.001 | .598 | | |

Table 6.26. Mean Mental Ability and Mean Educational Achievement for Traditional Longitudinal Cohort 1: Cedarburg High School

| | Mental Ability | | | Comprehension | | | | | | | |
|--------------------------|----------------|-----------|-------|---------------|------|-----------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 122 | 111.97 | 11.74 | 13.52 | 4.90 | 15.23 | 5.03 | 15.96 | 5.48 | 16.31 | 6.64 |
| Male | 73 | 111.89 | 12.33 | 13.15 | 4.65 | 15.01 | 4.74 | 15.59 | 5.45 | 15.67 | 6.83 |
| Female | 49 | 112.08 | 10.92 | 14.08 | 5.26 | 15.55 | 5.45 | 16.51 | 5.53 | 17.27 | 6.29 |
| 1st Quarter (Lowest) | | | | | | | | | | | |
| Total | 30 | 97.90 | 5.02 | 10.40 | 3.40 | 11.73 | 3.73 | 13.30 | 4.48 | 12.20 | 5.14 |
| Male | 20 | 97.50 | 5.82 | 9.80 | 3.79 | 11.90 | 4.25 | 12.80 | 4.83 | 12.20 | 5.65 |
| Female | 10 | 98.70 | 2.95 | 11.60 | 2.17 | 11.40 | 2.55 | 14.30 | 3.71 | 12.20 | 4.21 |
| 2nd Quarter | | | | | | | | | | | |
| Total | 31 | 107.00 | 2.05 | 11.71 | 4.07 | 13.51 | 4.23 | 14.39 | 3.90 | 14.74 | 5.46 |
| Male | 17 | 107.06 | 2.11 | 11.76 | 3.05 | 12.82 | 3.11 | 13.53 | 3.68 | 13.12 | 4.97 |
| Female | 14 | 106.93 | 2.06 | 11.64 | 5.17 | 14.36 | 5.30 | 15.43 | 4.03 | 16.71 | 5.55 |
| 3rd Quarter | | | | | | | | | | | |
| Total | 31 | 115.35 | 2.36 | 13.80 | 3.75 | 15.26 | 3.43 | 14.74 | 4.59 | 15.90 | 5.52 |
| Male | 16 | 116.19 | 2.34 | 13.56 | 3.29 | 15.38 | 3.01 | 14.75 | 4.40 | 15.69 | 6.05 |
| Female | 15 | 114.47 | 2.10 | 14.07 | 4.28 | 15.13 | 3.93 | 14.73 | 4.93 | 16.13 | 5.10 |
| 4th Quarter (Highest) | | | | | | | | | | | |
| Total | 30 | 127.67 | 6.40 | 18.23 | 4.50 | 20.47 | 4.07 | 21.50 | 4.94 | 22.47 | 5.95 |
| Male | 20 | 126.95 | 6.37 | 17.35 | 4.34 | 19.70 | 3.76 | 20.80 | 4.64 | 21.30 | 6.56 |
| Female | 10 | 129.10 | 6.56 | 20.00 | 4.52 | 22.00 | 4.45 | 22.90 | 5.47 | 24.80 | 3.77 |

Table 6.26. (Continued):

| | Vocabulary | | | | | | | |
|--------------------------|------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.43 | 5.19 | 16.74 | 4.77 | 16.30 | 5.48 | 17.89 | 6.68 |
| Male | 14.30 | 4.87 | 16.92 | 4.19 | 16.03 | 5.57 | 17.30 | 7.07 |
| Female | 14.61 | 5.69 | 16.47 | 5.55 | 16.71 | 5.39 | 18.78 | 5.99 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.47 | 4.52 | 13.10 | 4.80 | 12.07 | 4.89 | 13.30 | 5.47 |
| Male | 10.80 | 4.76 | 13.70 | 3.92 | 11.95 | 5.02 | 12.75 | 5.78 |
| Female | 9.80 | 4.13 | 11.90 | 6.28 | 12.30 | 4.88 | 14.40 | 4.90 |
| 2nd Quarter | | | | | | | | |
| Total | 13.45 | 4.03 | 15.84 | 2.82 | 15.32 | 4.54 | 16.97 | 5.49 |
| Male | 13.24 | 3.65 | 15.53 | 2.62 | 15.06 | 4.29 | 15.82 | 5.85 |
| Female | 13.71 | 4.58 | 16.21 | 3.09 | 15.64 | 4.97 | 18.36 | 4.85 |
| 3rd Quarter | | | | | | | | |
| Total | 14.39 | 3.70 | 16.42 | 3.17 | 16.61 | 4.22 | 17.42 | 6.56 |
| Male | 14.19 | 3.54 | 17.00 | 2.45 | 15.94 | 4.65 | 16.75 | 7.33 |
| Female | 14.60 | 3.98 | 15.80 | 3.78 | 17.33 | 3.74 | 18.13 | 5.79 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 19.43 | 4.24 | 21.63 | 3.69 | 21.23 | 4.11 | 23.93 | 4.43 |
| Male | 18.80 | 3.27 | 21.25 | 2.84 | 21.00 | 3.91 | 23.55 | 4.45 |
| Female | 20.70 | 5.71 | 22.40 | 5.08 | 21.70 | 4.67 | 24.70 | 4.50 |

Table 6.26. (Continued):

| | Reading Total | | | | | | | |
|--------------------------|---------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 13.37 | 4.41 | 15.39 | 4.71 | 15.70 | 5.22 | 16.93 | 6.47 |
| Male | 13.10 | 4.10 | 15.33 | 4.42 | 15.40 | 5.20 | 16.38 | 6.75 |
| Female | 13.78 | 4.85 | 15.49 | 5.15 | 16.14 | 5.26 | 17.73 | 6.00 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.20 | 2.75 | 11.83 | 3.43 | 12.17 | 3.66 | 12.43 | 4.67 |
| Male | 9.95 | 3.17 | 12.15 | 3.47 | 11.95 | 3.94 | 12.25 | 5.17 |
| Female | 10.70 | 1.64 | 11.20 | 3.46 | 12.60 | 3.17 | 12.80 | 3.68 |
| 2nd Quarter | | | | | | | | |
| Total | 11.84 | 3.15 | 13.84 | 3.30 | 14.35 | 3.73 | 15.48 | 5.34 |
| Male | 11.82 | 2.24 | 13.24 | 2.44 | 13.76 | 3.49 | 14.12 | 5.16 |
| Female | 11.86 | 4.09 | 14.57 | 4.09 | 15.07 | 4.00 | 17.14 | 5.26 |
| 3rd Quarter | | | | | | | | |
| Total | 13.29 | 2.42 | 15.19 | 2.83 | 15.75 | 4.03 | 16.52 | 5.52 |
| Male | 13.06 | 2.14 | 15.38 | 2.66 | 14.77 | 4.09 | 16.25 | 6.31 |
| Female | 13.53 | 2.75 | 15.00 | 3.09 | 15.47 | 4.09 | 16.80 | 4.74 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 18.20 | 4.50 | 20.77 | 3.93 | 21.13 | 4.83 | 23.33 | 5.11 |
| Male | 17.35 | 3.87 | 20.25 | 3.37 | 20.60 | 4.48 | 22.55 | 5.43 |
| Female | 19.90 | 5.36 | 21.80 | 4.89 | 22.20 | 5.57 | 24.90 | 4.20 |

Table 6.26. (Continued):

| | Usage | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 13.84 | 4.54 | 15.63 | 5.31 | 14.92 | 5.75 | 15.80 | 6.61 |
| Male | 13.16 | 4.77 | 14.34 | 5.66 | 13.92 | 5.78 | 14.96 | 6.61 |
| Female | 14.84 | 4.03 | 17.55 | 4.10 | 16.41 | 5.42 | 17.04 | 6.48 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.47 | 4.00 | 11.80 | 3.68 | 11.93 | 4.29 | 12.17 | 5.40 |
| Male | 9.25 | 4.20 | 10.90 | 3.91 | 10.55 | 3.15 | 11.95 | 4.84 |
| Female | 12.90 | 2.08 | 13.60 | 2.46 | 14.70 | 5.06 | 12.60 | 6.64 |
| 2nd Quarter | | | | | | | | |
| Total | 13.23 | 4.60 | 14.32 | 4.86 | 13.48 | 4.82 | 14.90 | 5.08 |
| Male | 12.41 | 4.30 | 11.65 | 3.87 | 12.12 | 4.09 | 13.00 | 4.21 |
| Female | 14.21 | 4.90 | 17.57 | 3.92 | 15.14 | 5.26 | 17.21 | 5.21 |
| 3rd Quarter | | | | | | | | |
| Total | 14.19 | 3.45 | 15.87 | 4.51 | 13.87 | 5.69 | 15.10 | 6.49 |
| Male | 14.13 | 3.86 | 14.13 | 4.92 | 13.06 | 6.55 | 13.69 | 7.36 |
| Female | 14.27 | 3.08 | 17.73 | 3.22 | 14.73 | 4.68 | 16.60 | 5.23 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 17.47 | 3.17 | 20.57 | 4.07 | 20.47 | 4.17 | 21.07 | 6.27 |
| Male | 16.95 | 2.93 | 20.25 | 4.33 | 19.50 | 4.51 | 20.65 | 5.99 |
| Female | 18.50 | 3.54 | 21.20 | 3.61 | 22.40 | 2.59 | 21.90 | 7.06 |

Table 6.26. (Continued):

| | Spelling | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.30 | 5.33 | 14.56 | 5.27 | 16.02 | 5.99 | 16.02 | 6.09 |
| Male | 11.32 | 4.98 | 13.64 | 5.39 | 14.84 | 6.36 | 14.70 | 6.24 |
| Female | 13.76 | 5.53 | 15.92 | 4.82 | 17.78 | 4.93 | 18.00 | 5.32 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 9.37 | 4.03 | 11.23 | 4.50 | 13.07 | 4.70 | 12.17 | 4.40 |
| Male | 8.60 | 4.25 | 10.50 | 5.23 | 12.00 | 5.06 | 11.40 | 4.80 |
| Female | 10.90 | 3.21 | 12.70 | 1.95 | 15.20 | 3.12 | 13.70 | 3.13 |
| 2nd Quarter | | | | | | | | |
| Total | 10.71 | 4.37 | 12.84 | 3.98 | 14.52 | 4.61 | 14.48 | 4.63 |
| Male | 10.24 | 4.34 | 11.88 | 4.01 | 13.12 | 5.33 | 13.18 | 4.36 |
| Female | 11.29 | 4.50 | 14.00 | 3.76 | 16.21 | 2.91 | 16.07 | 4.60 |
| 3rd Quarter | | | | | | | | |
| Total | 13.03 | 4.54 | 15.35 | 4.64 | 16.26 | 6.41 | 16.74 | 6.71 |
| Male | 11.44 | 4.49 | 13.94 | 4.34 | 14.63 | 6.82 | 14.13 | 7.48 |
| Female | 14.73 | 4.08 | 16.87 | 4.61 | 18.00 | 5.66 | 19.53 | 4.52 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 16.10 | 5.82 | 18.83 | 4.76 | 20.27 | 5.72 | 20.73 | 5.00 |
| Male | 14.85 | 4.73 | 18.05 | 4.55 | 19.30 | 5.93 | 19.75 | 4.87 |
| Female | 18.60 | 7.18 | 20.40 | 5.04 | 22.20 | 5.01 | 22.70 | 4.92 |

Table 6.26. (Continued):

| | Language Total | | | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 13.19 | 4.11 | 15.18 | 4.99 | 15.54 | 5.34 | 16.01 | 6.13 |
| Male | 12.37 | 4.33 | 14.03 | 5.20 | 14.45 | 5.65 | 14.89 | 6.42 |
| Female | 14.41 | 4.29 | 16.90 | 4.14 | 17.16 | 4.41 | 17.67 | 5.30 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 9.93 | 3.55 | 11.37 | 3.60 | 12.50 | 4.13 | 12.07 | 4.62 |
| Male | 8.95 | 3.75 | 10.50 | 3.98 | 11.25 | 3.80 | 11.55 | 4.61 |
| Female | 11.90 | 2.13 | 13.10 | 1.79 | 15.00 | 3.74 | 13.10 | 4.70 |
| 2nd Quarter | | | | | | | | |
| Total | 12.10 | 3.74 | 13.84 | 3.82 | 14.16 | 4.08 | 14.65 | 5.03 |
| Male | 11.47 | 3.18 | 11.94 | 3.27 | 12.76 | 3.77 | 12.88 | 4.26 |
| Female | 12.86 | 4.31 | 16.14 | 3.18 | 15.86 | 3.92 | 16.79 | 5.21 |
| 3rd Quarter | | | | | | | | |
| Total | 13.74 | 3.36 | 15.58 | 4.24 | 15.06 | 5.18 | 16.10 | 5.85 |
| Male | 12.94 | 3.45 | 14.00 | 4.43 | 13.94 | 6.39 | 14.06 | 7.19 |
| Female | 14.60 | 3.14 | 17.27 | 3.41 | 16.27 | 3.28 | 18.27 | 2.87 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 17.00 | 3.86 | 19.97 | 4.04 | 20.50 | 4.41 | 21.27 | 5.21 |
| Male | 16.10 | 3.32 | 19.35 | 3.90 | 19.50 | 4.67 | 20.60 | 5.36 |
| Female | 18.80 | 4.39 | 21.20 | 4.24 | 22.50 | 3.14 | 22.60 | 4.86 |

Table 6.26. (Continued):

| | Math | | | | | | | |
|-----------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.76 | 4.82 | 14.98 | 5.40 | 15.11 | 6.79 | 16.24 | 6.83 |
| Male | 12.85 | 4.84 | 15.29 | 5.39 | 15.49 | 6.77 | 16.94 | 7.08 |
| Female | 12.63 | 4.85 | 14.53 | 5.44 | 14.55 | 6.86 | 15.86 | 6.49 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 9.00 | 3.61 | 11.70 | 4.18 | 9.97 | 5.38 | 11.83 | 5.09 |
| Male | 8.85 | 3.50 | 11.65 | 4.27 | 10.10 | 5.47 | 11.55 | 4.95 |
| Female | 9.30 | 4.00 | 11.80 | 4.21 | 9.70 | 5.48 | 12.40 | 5.60 |
| 2nd Quarter | | | | | | | | |
| Total | 11.32 | 3.43 | 12.90 | 4.28 | 13.71 | 4.52 | 14.35 | 4.60 |
| Male | 11.71 | 2.89 | 13.41 | 3.81 | 14.18 | 4.35 | 15.06 | 4.64 |
| Female | 10.86 | 4.05 | 12.29 | 4.86 | 13.14 | 4.82 | 13.50 | 4.57 |
| 3rd Quarter | | | | | | | | |
| Total | 13.19 | 3.95 | 14.58 | 4.52 | 14.90 | 6.67 | 15.48 | 6.27 |
| Male | 13.69 | 4.31 | 15.38 | 5.23 | 16.00 | 6.79 | 16.06 | 7.52 |
| Female | 12.67 | 3.60 | 13.73 | 3.61 | 13.73 | 6.56 | 14.87 | 4.76 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 17.57 | 3.85 | 20.83 | 3.60 | 21.93 | 4.31 | 23.37 | 5.39 |
| Male | 17.15 | 4.08 | 20.45 | 3.62 | 21.60 | 4.43 | 23.00 | 5.51 |
| Female | 18.40 | 3.37 | 21.60 | 3.63 | 22.60 | 4.22 | 24.10 | 5.36 |

Table 6.26. (Continued):

| | Social Studies | | | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.81 | 4.46 | 14.37 | 4.96 | 15.34 | 6.15 | 16.00 | 7.39 |
| Male | 12.73 | 4.20 | 14.59 | 4.86 | 15.32 | 6.23 | 15.67 | 7.87 |
| Female | 12.94 | 4.85 | 14.04 | 5.15 | 15.37 | 6.09 | 16.49 | 6.67 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.10 | 2.58 | 11.47 | 4.20 | 12.13 | 5.06 | 11.73 | 6.58 |
| Male | 9.95 | 2.78 | 11.25 | 4.72 | 11.80 | 5.64 | 11.00 | 7.00 |
| Female | 10.40 | 2.22 | 11.90 | 3.07 | 12.80 | 3.85 | 13.20 | 5.67 |
| 2nd Quarter | | | | | | | | |
| Total | 11.52 | 3.50 | 12.68 | 4.04 | 14.72 | 4.22 | 14.90 | 6.45 |
| Male | 11.18 | 2.51 | 13.00 | 2.67 | 14.29 | 4.15 | 14.47 | 6.87 |
| Female | 11.93 | 4.50 | 12.29 | 5.34 | 15.35 | 4.38 | 15.43 | 6.11 |
| 3rd Quarter | | | | | | | | |
| Total | 12.19 | 3.14 | 13.87 | 3.64 | 13.81 | 5.75 | 15.00 | 6.70 |
| Male | 12.75 | 3.42 | 14.56 | 3.44 | 14.93 | 6.22 | 14.63 | 7.02 |
| Female | 11.60 | 2.80 | 13.13 | 3.81 | 12.60 | 5.12 | 15.40 | 6.57 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 17.50 | 4.56 | 19.53 | 3.88 | 20.70 | 6.04 | 22.43 | 5.59 |
| Male | 16.80 | 4.11 | 19.30 | 3.80 | 20.00 | 5.76 | 22.20 | 6.08 |
| Female | 18.90 | 5.30 | 20.00 | 4.20 | 22.10 | 6.64 | 22.90 | 4.72 |

Table 6.26. (Continued):

| | Science | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.51 | 5.40 | 16.75 | 5.74 | 17.89 | 6.60 | 16.52 | 7.39 |
| Male | 14.77 | 5.54 | 17.23 | 5.57 | 18.03 | 7.04 | 16.27 | 8.03 |
| Female | 14.12 | 5.22 | 16.02 | 5.97 | 17.67 | 5.95 | 16.88 | 6.29 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 11.60 | 4.69 | 13.00 | 5.34 | 14.53 | 6.00 | 11.90 | 6.85 |
| Male | 11.30 | 5.20 | 13.40 | 5.85 | 14.40 | 6.25 | 11.40 | 7.65 |
| Female | 12.20 | 3.65 | 12.20 | 4.32 | 14.80 | 5.79 | 12.90 | 5.09 |
| 2nd Quarter | | | | | | | | |
| Total | 12.97 | 4.50 | 14.61 | 5.58 | 17.19 | 5.04 | 15.52 | 6.40 |
| Male | 13.76 | 4.04 | 15.53 | 4.20 | 17.24 | 6.25 | 15.12 | 7.19 |
| Female | 12.00 | 4.98 | 13.50 | 6.90 | 17.14 | 3.23 | 16.00 | 5.51 |
| 3rd Quarter | | | | | | | | |
| Total | 14.16 | 4.58 | 17.39 | 3.98 | 16.58 | 7.16 | 15.77 | 6.76 |
| Male | 14.56 | 4.79 | 17.69 | 4.41 | 16.75 | 7.65 | 15.31 | 7.65 |
| Female | 13.73 | 4.46 | 17.07 | 3.60 | 16.40 | 6.87 | 16.27 | 5.89 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 19.37 | 4.62 | 22.03 | 3.43 | 23.30 | 4.70 | 22.93 | 5.02 |
| Male | 19.25 | 4.77 | 22.15 | 3.08 | 23.35 | 4.91 | 22.90 | 5.11 |
| Female | 19.60 | 4.55 | 21.80 | 4.21 | 23.20 | 4.49 | 23.00 | 5.12 |

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Table 6.26. (Continued):

| Use of Sources | | | | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | | Grade 12 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 13.83 | 5.08 | 14.95 | 5.99 | 15.20 | 6.44 | 15.81 | 7.98 |
| Male | 13.42 | 4.94 | 14.03 | 6.50 | 13.99 | 6.54 | 14.40 | 8.13 |
| Female | 14.43 | 5.27 | 16.33 | 4.90 | 17.00 | 5.91 | 17.92 | 7.35 |
| 1st Quarter (Lowest) | | | | | | | | |
| Total | 10.07 | 4.19 | 11.67 | 4.76 | 12.03 | 5.86 | 11.83 | 6.63 |
| Male | 9.65 | 3.90 | 10.65 | 4.75 | 10.65 | 5.42 | 10.55 | 6.55 |
| Female | 10.90 | 4.84 | 13.70 | 4.30 | 14.80 | 5.98 | 14.40 | 6.33 |
| 2nd Quarter | | | | | | | | |
| Total | 11.84 | 3.58 | 13.32 | 5.29 | 13.87 | 4.26 | 14.77 | 7.24 |
| Male | 12.00 | 3.46 | 11.88 | 5.31 | 12.06 | 3.07 | 12.18 | 6.13 |
| Female | 11.64 | 3.84 | 15.07 | 4.89 | 16.07 | 4.57 | 17.93 | 7.43 |
| 3rd Quarter | | | | | | | | |
| Total | 14.26 | 3.52 | 13.68 | 4.98 | 14.52 | 6.32 | 14.26 | 7.95 |
| Male | 12.88 | 3.32 | 11.81 | 6.10 | 13.44 | 6.70 | 11.81 | 6.96 |
| Female | 15.73 | 3.20 | 15.67 | 2.26 | 15.67 | 5.89 | 16.87 | 8.32 |
| 4th Quarter (Highest) | | | | | | | | |
| Total | 19.20 | 3.86 | 21.23 | 3.99 | 20.43 | 6.13 | 22.47 | 6.03 |
| Male | 18.85 | 3.22 | 21.00 | 3.57 | 19.40 | 6.56 | 22.20 | 6.91 |
| Female | 19.90 | 5.04 | 21.70 | 4.90 | 22.50 | 4.84 | 23.00 | 4.00 |

Table 6.27. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Traditional Longitudinal Cohort 1: Cedarburg High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 196.13 | 1693.73 | 34.07 | 57.94 | 176.70 | 6.04 | 13.87 | 7.81 | 7.65 |
| F | 3.38 | 29.23 | .59 | | 23.11 | .79 | 1.81 | 1.02 | |
| P | .068 | <.001 | .624 | | <.001 | .500 | .065 | .422 | |
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 48.09 | 1688.04 | 11.41 | 58.02 | 249.51 | 19.05 | 4.09 | 5.47 | 8.12 |
| F | .83 | 29.09 | .20 | | 30.73 | 2.35 | .50 | .67 | |
| P | .365 | <.001 | .899 | | <.001 | .073 | .871 | .733 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 113.36 | 1771.56 | 21.10 | 50.36 | 250.97 | 7.22 | 7.30 | 3.93 | 5.23 |
| F | 2.25 | 35.18 | .42 | | 47.95 | 1.38 | 1.39 | .75 | |
| P | .136 | <.001 | .740 | | <.001 | .249 | .189 | .662 | |
| <u>Usage</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 754.88 | 1279.76 | 24.22 | 56.90 | 85.92 | 13.10 | 16.15 | 15.88 | 9.19 |
| F | 13.27 | 22.49 | .43 | | 9.35 | 1.42 | 1.76 | 1.73 | |
| P | <.001 | <.001 | .735 | | <.001 | .235 | .075 | .081 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 950.48 | 1193.49 | 12.79 | 73.18 | 357.76 | 6.08 | 3.76 | 4.40 | 6.88 |
| F | 12.99 | 16.31 | .17 | | 51.96 | .88 | .55 | .64 | |
| P | <.001 | <.001 | .913 | | <.001 | .450 | .840 | .763 | |

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Table 6.27. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 882.83 | 1306.01 | 2.85 | 52.77 | 176.68 | 4.70 | 8.28 | 7.89 | 5.62 |
| F | 16.73 | 24.75 | .05 | | 31.44 | .84 | 1.47 | 1.40 | |
| P | <.001 | <.001 | .983 | | <.001 | .474 | .156 | .185 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 11.82 | 2156.77 | 43.42 | 58.89 | 242.45 | 2.09 | 19.61 | .96 | 10.32 |
| F | .20 | 36.62 | .74 | | 23.48 | .20 | 1.90 | .09 | |
| P | .655 | <.001 | .532 | | <.001 | .895 | .051 | .999 | |
| <u>Social Studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 27.31 | 1561.43 | 34.30 | 63.77 | 224.85 | 8.81 | 11.55 | 5.85 | 11.39 |
| F | .43 | 24.49 | .54 | | 19.73 | .77 | 1.01 | .51 | |
| P | .514 | <.001 | .657 | | <.001 | .510 | .428 | .865 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 2.36 | 1615.97 | 6.58 | 77.98 | 221.50 | 17.86 | 19.91 | 3.55 | 13.88 |
| F | .03 | 20.72 | .08 | | 15.96 | 1.29 | 1.43 | .26 | |
| P | .862 | <.001 | .968 | | <.001 | .279 | .172 | .985 | |
| <u>Use of Sources</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 114 | 3 | 3 | 9 | 9 | 342 |
| Mean Square | 886.65 | 1750.54 | 24.05 | 70.59 | 97.53 | 38.41 | 15.34 | 13.98 | 13.87 |
| F | 12.56 | 24.80 | .34 | | 7.03 | 2.77 | 1.11 | 1.01 | |
| P | .001 | <.001 | .796 | | <.001 | .042 | .358 | .433 | |

Table 6.28. Mean Mental Ability and Mean Educational Achievement for Traditional Longitudinal Cohort 2: Cedarburg High School

| | Mental Ability | | | Comprehension | | | | | |
|-----------------------|----------------|-----------|-------|---------------|------|-----------|------|-----------|------|
| | N | \bar{X} | SD | Grade 9 | | Grade 10 | | Grade 11 | |
| | | | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 130 | 113.85 | 10.59 | 13.91 | 4.34 | 16.36 | 4.91 | 17.38 | 5.07 |
| Male | 55 | 113.80 | 11.36 | 13.13 | 4.56 | 15.82 | 5.08 | 17.25 | 6.00 |
| Female | 75 | 113.88 | 10.07 | 14.48 | 4.10 | 16.76 | 4.77 | 17.48 | 4.30 |
| 1st Quarter (lowest) | | | | | | | | | |
| Total | 32 | 101.16 | 4.14 | 11.50 | 3.83 | 12.84 | 3.99 | 13.53 | 4.79 |
| Male | 14 | 101.57 | 3.65 | 11.36 | 3.37 | 12.86 | 3.68 | 12.57 | 5.72 |
| Female | 18 | 100.83 | 4.55 | 11.61 | 4.24 | 12.83 | 4.33 | 14.28 | 3.92 |
| 2nd Quarter | | | | | | | | | |
| Total | 33 | 109.85 | 1.68 | 11.85 | 3.63 | 14.45 | 3.68 | 15.85 | 3.71 |
| Male | 17 | 109.59 | 1.73 | 10.53 | 3.28 | 13.76 | 4.05 | 15.35 | 4.03 |
| Female | 16 | 110.13 | 1.63 | 13.25 | 3.55 | 15.19 | 3.21 | 16.38 | 3.38 |
| 3rd Quarter | | | | | | | | | |
| Total | 32 | 116.22 | 2.47 | 14.78 | 3.26 | 17.81 | 3.93 | 18.16 | 4.27 |
| Male | 11 | 116.27 | 1.20 | 14.27 | 3.20 | 17.18 | 3.74 | 19.00 | 4.31 |
| Female | 21 | 116.19 | 2.66 | 15.05 | 3.34 | 18.14 | 4.08 | 17.71 | 4.28 |
| 4th Quarter (highest) | | | | | | | | | |
| Total | 33 | 127.85 | 6.46 | 17.45 | 3.77 | 20.27 | 4.37 | 21.91 | 3.32 |
| Male | 13 | 130.38 | 7.41 | 17.46 | 4.86 | 20.54 | 5.09 | 23.31 | 4.01 |
| Female | 20 | 126.20 | 5.32 | 17.45 | 3.00 | 20.10 | 3.96 | 21.00 | 2.49 |

Table 6.28. (Continued):

| | Vocabulary | | | | | |
|--------------------------|------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.47 | 4.53 | 16.31 | 4.54 | 18.89 | 4.62 |
| Male | 15.80 | 4.51 | 16.13 | 5.01 | 18.84 | 5.11 |
| Female | 15.23 | 4.56 | 16.44 | 4.19 | 18.93 | 4.25 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 11.88 | 4.04 | 13.56 | 3.99 | 15.34 | 4.75 |
| Male | 13.00 | 3.74 | 13.29 | 4.70 | 15.21 | 5.10 |
| Female | 11.00 | 4.14 | 13.78 | 3.47 | 15.44 | 4.60 |
| 2nd Quarter | | | | | | |
| Total | 13.91 | 3.65 | 14.18 | 3.60 | 17.64 | 3.39 |
| Male | 13.76 | 3.33 | 14.00 | 3.35 | 17.06 | 3.38 |
| Female | 14.06 | 4.07 | 14.38 | 3.95 | 18.25 | 3.40 |
| 3rd Quarter | | | | | | |
| Total | 16.91 | 3.53 | 17.72 | 3.99 | 20.38 | 3.63 |
| Male | 17.45 | 3.70 | 17.73 | 5.18 | 20.73 | 4.31 |
| Female | 16.62 | 3.50 | 17.71 | 3.35 | 20.19 | 3.31 |
| 4th Quarter (Highest) | | | | | | |
| Total | 19.12 | 3.20 | 19.73 | 3.61 | 22.15 | 3.53 |
| Male | 20.08 | 3.57 | 20.62 | 3.40 | 23.46 | 3.53 |
| Female | 18.50 | 2.86 | 19.15 | 3.70 | 21.30 | 3.34 |

Table 6.28. (Continued):

| | Grade 9 | | Grade 10 | | Grade 11 | |
|-------------|-----------|------|-----------|------|-----------|------|
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.11 | 3.90 | 15.82 | 4.45 | 17.75 | 4.81 |
| Male | 13.91 | 4.19 | 15.53 | 4.71 | 17.73 | 5.67 |
| Female | 14.25 | 3.69 | 16.03 | 4.27 | 17.76 | 4.10 |
| 1st Quarter | | | | | | |
| (Lowest) | | | | | | |
| Total | 11.22 | 2.81 | 12.59 | 3.11 | 13.75 | 4.14 |
| Male | 11.50 | 2.56 | 12.50 | 2.82 | 13.29 | 4.92 |
| Female | 11.00 | 3.05 | 12.67 | 3.40 | 14.11 | 3.53 |
| 2nd Quarter | | | | | | |
| Total | 12.33 | 2.79 | 13.79 | 3.17 | 16.09 | 3.48 |
| Male | 11.59 | 2.55 | 13.35 | 3.35 | 15.53 | 3.57 |
| Female | 13.13 | 2.90 | 14.25 | 3.00 | 16.69 | 3.38 |
| 3rd Quarter | | | | | | |
| Total | 15.19 | 2.91 | 17.22 | 3.75 | 19.06 | 3.84 |
| Male | 15.27 | 2.94 | 17.09 | 3.99 | 19.91 | 4.59 |
| Female | 15.14 | 2.97 | 17.29 | 3.72 | 18.62 | 3.43 |
| 4th Quarter | | | | | | |
| (Highest) | | | | | | |
| Total | 17.64 | 3.46 | 19.61 | 3.93 | 22.00 | 3.32 |
| Male | 18.38 | 4.25 | 20.31 | 4.33 | 23.54 | 3.64 |
| Female | 17.15 | 2.85 | 19.15 | 3.69 | 21.00 | 2.73 |

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Table 6.28. (Continued):

| | Usage | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 15.49 | 4.08 | 16.77 | 3.76 | 18.12 | 4.71 |
| Male | 14.38 | 3.77 | 16.00 | 3.66 | 16.76 | 5.00 |
| Female | 16.31 | 4.13 | 17.33 | 3.75 | 19.11 | 4.25 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 12.81 | 4.03 | 13.88 | 3.32 | 15.53 | 3.84 |
| Male | 12.00 | 4.33 | 13.00 | 2.69 | 14.50 | 4.15 |
| Female | 13.44 | 3.78 | 14.56 | 3.67 | 16.33 | 3.48 |
| 2nd Quarter | | | | | | |
| Total | 14.33 | 3.18 | 16.24 | 2.96 | 16.82 | 3.41 |
| Male | 13.41 | 2.37 | 15.59 | 2.40 | 16.18 | 3.64 |
| Female | 15.31 | 3.68 | 16.94 | 3.40 | 17.50 | 3.12 |
| 3rd Quarter | | | | | | |
| Total | 16.56 | 3.58 | 17.47 | 3.49 | 18.00 | 5.01 |
| Male | 16.00 | 3.22 | 16.64 | 3.29 | 16.09 | 6.39 |
| Female | 16.86 | 3.80 | 17.90 | 3.59 | 19.00 | 3.92 |
| 4th Quarter (Highest) | | | | | | |
| Total | 18.21 | 3.40 | 19.42 | 3.04 | 22.03 | 3.88 |
| Male | 16.85 | 3.26 | 19.23 | 3.63 | 20.54 | 4.47 |
| Female | 19.10 | 3.26 | 19.55 | 2.68 | 23.00 | 3.20 |

Table 6.28. (Continued):

| | Spelling | | | | | |
|-------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.07 | 4.83 | 15.82 | 4.39 | 18.12 | 5.03 |
| Male | 12.65 | 4.80 | 14.78 | 4.02 | 16.29 | 4.92 |
| Female | 15.11 | 4.61 | 16.57 | 4.52 | 19.45 | 4.72 |
| 1st Quarter | | | | | | |
| (Lowest) | | | | | | |
| Total | 11.53 | 3.98 | 13.41 | 4.43 | 15.59 | 4.76 |
| Male | 11.14 | 3.86 | 13.14 | 4.80 | 13.93 | 4.48 |
| Female | 11.83 | 4.16 | 13.61 | 4.26 | 16.89 | 4.69 |
| 2nd Quarter | | | | | | |
| Total | 12.73 | 5.01 | 14.88 | 4.36 | 16.97 | 5.02 |
| Male | 11.18 | 5.36 | 13.47 | 3.97 | 14.82 | 4.61 |
| Female | 14.38 | 4.15 | 16.38 | 4.38 | 19.25 | 4.49 |
| 3rd Quarter | | | | | | |
| Total | 16.03 | 4.76 | 16.69 | 3.75 | 19.19 | 4.37 |
| Male | 14.73 | 5.02 | 15.82 | 2.36 | 18.00 | 5.20 |
| Female | 16.71 | 4.58 | 17.14 | 4.28 | 19.81 | 3.87 |
| 4th Quarter | | | | | | |
| (Highest) | | | | | | |
| Total | 15.97 | 3.98 | 18.24 | 3.54 | 20.67 | 4.57 |
| Male | 14.46 | 3.89 | 17.38 | 2.84 | 19.31 | 3.75 |
| Female | 16.95 | 3.82 | 18.80 | 3.89 | 21.55 | 4.93 |

Table 6.28. (Continued):

| | Language Total | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.95 | 3.91 | 16.48 | 3.72 | 18.45 | 4.59 |
| Male | 13.67 | 3.57 | 15.55 | 3.39 | 16.85 | 4.72 |
| Female | 15.89 | 3.89 | 17.16 | 3.83 | 19.61 | 4.15 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 12.31 | 3.32 | 13.72 | 2.98 | 15.69 | 4.06 |
| Male | 11.71 | 3.20 | 13.14 | 2.91 | 14.29 | 4.10 |
| Female | 12.78 | 3.42 | 14.17 | 3.03 | 16.78 | 3.78 |
| 2nd Quarter | | | | | | |
| Total | 13.76 | 3.24 | 15.61 | 3.30 | 17.24 | 3.80 |
| Male | 12.59 | 2.87 | 14.65 | 2.60 | 15.88 | 3.60 |
| Female | 15.00 | 3.22 | 16.63 | 3.72 | 18.69 | 3.55 |
| 3rd Quarter | | | | | | |
| Total | 16.47 | 3.56 | 17.34 | 3.52 | 19.06 | 4.51 |
| Male | 15.55 | 3.62 | 16.45 | 2.73 | 17.55 | 5.79 |
| Female | 16.95 | 3.53 | 17.81 | 3.84 | 19.86 | 3.60 |
| 4th Quarter (Highest) | | | | | | |
| Total | 17.24 | 3.45 | 19.18 | 2.79 | 21.73 | 3.76 |
| Male | 15.62 | 3.33 | 18.54 | 2.99 | 20.31 | 3.79 |
| Female | 18.30 | 3.16 | 19.60 | 2.64 | 22.65 | 3.53 |

Table 6.28. (Continued):

| | Math | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.93 | 3.95 | 14.96 | 5.27 | 16.61 | 5.47 |
| Male | 13.64 | 4.60 | 15.76 | 6.00 | 17.05 | 6.48 |
| Female | 12.41 | 3.34 | 14.37 | 4.61 | 16.28 | 4.62 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 10.00 | 2.91 | 11.56 | 3.96 | 12.38 | 4.03 |
| Male | 10.79 | 2.78 | 12.86 | 4.54 | 13.00 | 4.35 |
| Female | 9.39 | 2.93 | 10.56 | 3.22 | 11.89 | 3.82 |
| 2nd Quarter | | | | | | |
| Total | 11.15 | 2.24 | 12.55 | 4.08 | 14.33 | 4.23 |
| Male | 11.06 | 2.56 | 12.88 | 4.27 | 13.59 | 4.84 |
| Female | 11.25 | 1.91 | 12.19 | 3.97 | 15.13 | 3.44 |
| 3rd Quarter | | | | | | |
| Total | 13.66 | 2.86 | 15.66 | 3.96 | 17.69 | 3.86 |
| Male | 14.82 | 3.52 | 15.91 | 5.15 | 18.36 | 4.43 |
| Female | 13.05 | 2.31 | 15.52 | 3.33 | 17.33 | 3.60 |
| 4th Quarter (Highest) | | | | | | |
| Total | 16.85 | 3.70 | 20.00 | 4.53 | 21.94 | 4.34 |
| Male | 19.08 | 3.97 | 22.54 | 4.67 | 24.85 | 4.14 |
| Female | 15.40 | 2.74 | 18.35 | 3.67 | 20.05 | 3.38 |

Table 6.28. (Continued):

| | Social Studies | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 12.77 | 3.84 | 15.31 | 4.96 | 18.85 | 4.77 |
| Male | 13.18 | 4.15 | 15.20 | 5.49 | 17.09 | 5.69 |
| Female | 12.47 | 3.59 | 15.39 | 4.57 | 16.68 | 3.99 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 10.97 | 3.78 | 12.44 | 4.41 | 14.03 | 4.48 |
| Male | 12.60 | 3.84 | 11.86 | 4.80 | 13.79 | 5.63 |
| Female | 10.17 | 3.62 | 12.89 | 4.16 | 14.22 | 3.49 |
| 2nd Quarter | | | | | | |
| Total | 11.42 | 3.76 | 13.00 | 3.67 | 15.24 | 3.95 |
| Male | 11.29 | 4.01 | 12.94 | 3.83 | 14.65 | 4.81 |
| Female | 11.56 | 3.60 | 13.06 | 3.61 | 15.88 | 2.80 |
| 3rd Quarter | | | | | | |
| Total | 13.34 | 2.59 | 16.13 | 3.83 | 17.22 | 4.27 |
| Male | 13.82 | 2.60 | 16.55 | 3.62 | 18.36 | 3.98 |
| Female | 13.10 | 2.61 | 15.90 | 4.01 | 16.62 | 4.39 |
| 4th Quarter (Highest) | | | | | | |
| Total | 15.30 | 3.59 | 19.61 | 4.38 | 20.85 | 3.42 |
| Male | 16.38 | 4.05 | 20.62 | 5.12 | 22.77 | 3.11 |
| Female | 14.60 | 3.17 | 18.95 | 3.82 | 19.60 | 3.07 |

Table 6.28. (Continued):

| | Science | | | | | |
|--------------------------|-----------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 14.73 | 5.01 | 18.44 | 4.65 | 18.92 | 5.45 |
| Male | 15.00 | 5.31 | 18.96 | 5.28 | 19.98 | 6.40 |
| Female | 14.53 | 4.80 | 18.05 | 4.12 | 18.13 | 4.52 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 11.06 | 4.56 | 14.69 | 4.33 | 14.81 | 5.58 |
| Male | 11.43 | 4.03 | 14.50 | 4.69 | 15.29 | 6.63 |
| Female | 10.78 | 5.04 | 14.83 | 4.18 | 14.44 | 4.79 |
| 2nd Quarter | | | | | | |
| Total | 13.18 | 3.54 | 16.97 | 3.74 | 17.48 | 4.92 |
| Male | 12.88 | 3.94 | 17.41 | 4.51 | 17.94 | 5.97 |
| Female | 13.50 | 3.16 | 16.50 | 2.76 | 17.00 | 3.61 |
| 3rd Quarter | | | | | | |
| Total | 15.84 | 4.42 | 20.28 | 3.15 | 20.25 | 3.90 |
| Male | 17.55 | 4.11 | 22.00 | 2.93 | 22.91 | 3.73 |
| Female | 14.95 | 4.41 | 19.38 | 2.94 | 18.86 | 3.28 |
| 4th Quarter (Highest) | | | | | | |
| Total | 18.76 | 3.93 | 21.76 | 3.78 | 23.03 | 3.54 |
| Male | 19.46 | 5.06 | 23.23 | 3.56 | 25.23 | 2.92 |
| Female | 18.30 | 3.05 | 20.80 | 3.69 | 21.60 | 3.20 |

Table 6.28. (Continued):

| | Use of Sources | | | | | |
|--------------------------|----------------|------|-----------|------|-----------|------|
| | Grade 9 | | Grade 10 | | Grade 11 | |
| | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 16.46 | 4.74 | 16.65 | 5.03 | 18.11 | 5.87 |
| Male | 15.71 | 5.13 | 16.40 | 5.52 | 16.78 | 6.38 |
| Female | 17.01 | 4.39 | 16.84 | 4.66 | 19.08 | 5.30 |
| 1st Quarter (Lowest) | | | | | | |
| Total | 12.44 | 3.83 | 13.22 | 4.26 | 13.94 | 3.71 |
| Male | 11.86 | 2.74 | 13.57 | 5.14 | 12.93 | 4.46 |
| Female | 12.89 | 4.54 | 12.94 | 3.57 | 14.72 | 2.89 |
| 2nd Quarter | | | | | | |
| Total | 15.24 | 4.60 | 15.36 | 4.58 | 15.94 | 5.58 |
| Male | 13.71 | 4.81 | 15.76 | 4.87 | 14.00 | 5.23 |
| Female | 16.88 | 3.86 | 15.00 | 4.32 | 18.00 | 5.33 |
| 3rd Quarter | | | | | | |
| Total | 17.91 | 3.50 | 17.50 | 4.26 | 19.09 | 5.47 |
| Male | 18.36 | 4.30 | 16.91 | 4.48 | 18.73 | 6.97 |
| Female | 17.67 | 3.10 | 17.81 | 4.21 | 19.29 | 4.69 |
| 4th Quarter (Highest) | | | | | | |
| Total | 20.18 | 3.05 | 20.45 | 4.07 | 23.36 | 3.72 |
| Male | 20.23 | 3.54 | 21.15 | 4.74 | 22.92 | 3.48 |
| Female | 20.15 | 2.78 | 20.00 | 3.63 | 23.65 | 3.94 |

Table 6.29. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Traditional Longitudinal Cohort 2: Cedarburg High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Comprehension</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 14.91 | 1007.55 | 29.03 | 32.41 | 416.91 | 10.46 | 11.92 | 8.69 | 6.62 |
| F | .46 | 31.09 | .90 | | 63.01 | 1.58 | 1.80 | 1.31 | |
| P | .499 | <.001 | .446 | | <.001 | .208 | .099 | .252 | |
| <u>Vocabulary</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 23.38 | 906.19 | 22.42 | 33.17 | 394.89 | 6.74 | 4.46 | 4.14 | 4.76 |
| F | .70 | 27.32 | .68 | | 82.88 | 1.41 | .94 | .87 | |
| P | .403 | <.001 | .568 | | <.001 | .245 | .465 | .519 | |
| <u>Reading Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 2.79 | 1030.07 | 33.80 | 28.60 | 425.08 | 2.03 | 6.73 | 3.88 | 3.28 |
| F | .10 | 36.02 | 1.18 | | 129.47 | .62 | 2.05 | 1.18 | |
| P | .756 | <.001 | .320 | | <.001 | .539 | .060 | .317 | |
| <u>Usage</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 246.11 | 549.11 | .13 | 27.52 | 197.99 | 7.92 | 12.04 | 4.38 | 5.46 |
| F | 8.94 | 19.96 | <.01 | | 36.26 | 1.45 | 2.20 | .80 | |
| P | .003 | <.001 | .999 | | <.001 | .236 | .043 | .569 | |
| <u>Spelling</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 435.76 | 410.93 | 21.45 | 44.55 | 505.76 | 13.91 | 4.85 | 3.10 | 5.46 |
| F | 9.78 | 9.22 | .48 | | 92.55 | 2.55 | .89 | .57 | |
| P | .002 | <.001 | .696 | | <.001 | .080 | .505 | .757 | |

Table 6.29. (Continued):

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|-----------------------|--------|------------|-------|-------|---------|-------|-------|-----------|-------|
| <u>Language Total</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 341.32 | 501.71 | 3.58 | 29.33 | 369.03 | 10.01 | 5.85 | 1.58 | 3.27 |
| F | 11.64 | 17.11 | .12 | | 112.76 | 3.06 | 1.79 | .48 | |
| P | .001 | <.001 | .947 | | <.001 | .049 | .102 | .820 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 249.86 | 1403.88 | 87.34 | 24.38 | 420.81 | 2.31 | 13.34 | 5.57 | 7.76 |
| F | 10.25 | 57.58 | 3.58 | | 54.20 | .30 | 1.72 | .72 | |
| P | .002 | <.001 | .016 | | <.001 | .743 | .117 | .636 | |
| <u>Social studies</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 46.60 | 777.10 | 33.98 | 33.90 | 535.99 | 4.41 | 17.89 | 8.28 | 5.48 |
| F | 1.37 | 22.92 | 1.00 | | 97.79 | .80 | 3.26 | 1.51 | |
| P | .243 | <.001 | .394 | | <.001 | .448 | .004 | .175 | |
| <u>Science</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | 6 | 6 | 244 |
| Mean Square | 231.30 | 1159.40 | 44.20 | 34.87 | 679.50 | 16.33 | 3.94 | 3.48 | 7.78 |
| F | 6.63 | 33.25 | 1.27 | | 87.31 | 2.10 | .51 | .45 | |
| P | .011 | <.001 | .289 | | <.001 | .125 | .803 | .847 | |
| <u>Use of Sources</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 122 | 2 | 2 | | 6 | 244 |
| Mean Square | 76.48 | 1168.35 | 41.99 | 39.76 | 91.18 | 22.06 | 13.50 | 5.74 | 7.34 |
| F | 1.92 | 29.39 | 1.06 | | 12.43 | 3.01 | 1.84 | .70 | |
| P | .168 | <.001 | .370 | | <.001 | .051 | .092 | | |

Table 7.1. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 10 Groups: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|---------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | |
| Total | 195 | 101.66 | 14.77 | 49.64 | 14.63 | 44.68 | 13.90 | 27.28 | 9.92 |
| Male | 101 | 99.90 | 15.62 | 47.87 | 15.94 | 41.12 | 14.84 | 26.58 | 10.77 |
| Female | 94 | 103.55 | 13.63 | 51.33 | 12.90 | 48.50 | 11.73 | 28.03 | 8.92 |
| 1978-79 | | | | | | | | | |
| Total | 160 | 103.73 | 14.06 | 49.36 | 13.43 | 44.45 | 12.91 | 26.78 | 9.83 |
| Male | 79 | 105.33 | 14.08 | 49.30 | 14.82 | 42.13 | 13.83 | 27.22 | 9.92 |
| Female | 81 | 102.17 | 13.95 | 49.42 | 12.01 | 46.72 | 11.60 | 26.35 | 9.79 |
| 1979-80 | | | | | | | | | |
| Total | 173 | 95.28 | 14.78 | 51.22 | 12.85 | 45.50 | 12.65 | 27.67 | 9.39 |
| Male | 92 | 94.11 | 15.89 | 49.51 | 13.32 | 41.36 | 12.86 | 26.47 | 9.73 |
| Female | 81 | 96.62 | 13.39 | 53.16 | 12.10 | 50.21 | 10.67 | 29.04 | 8.85 |
| 1980-81 | | | | | | | | | |
| Total | 132 | 94.04 | 15.50 | 49.58 | 14.62 | 46.15 | 14.02 | 26.55 | 9.70 |
| Male | 61 | 92.70 | 13.33 | 46.48 | 14.18 | 41.44 | 14.39 | 25.25 | 10.57 |
| Female | 71 | 95.18 | 17.16 | 52.25 | 14.56 | 50.20 | 12.42 | 27.68 | 8.80 |

Table 7.2. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 11 Groups: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|---------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | |
| Total | 151 | 105.36 | 13.26 | 56.19 | 11.75 | 49.31 | 11.13 | 31.13 | 8.91 |
| Male | 66 | 106.85 | 10.96 | 55.95 | 10.75 | 46.24 | 11.63 | 31.56 | 8.84 |
| Female | 85 | 104.20 | 14.76 | 56.36 | 12.54 | 51.69 | 10.18 | 30.80 | 9.01 |
| 1978-79 | | | | | | | | | |
| Total | 169 | 102.42 | 14.10 | 55.69 | 13.62 | 48.92 | 13.71 | 30.41 | 10.46 |
| Male | 88 | 100.91 | 14.44 | 54.20 | 15.35 | 44.45 | 14.17 | 28.88 | 11.15 |
| Female | 81 | 104.06 | 13.62 | 57.30 | 11.32 | 53.33 | 11.77 | 32.07 | 9.45 |
| 1979-80 | | | | | | | | | |
| Total | 113 | 106.60 | 13.47 | 55.67 | 13.06 | 49.25 | 11.70 | 32.13 | 9.79 |
| Male | 57 | 107.65 | 14.32 | 55.75 | 15.26 | 46.31 | 12.79 | 32.43 | 10.25 |
| Female | 56 | 105.54 | 12.59 | 55.59 | 10.48 | 52.29 | 9.65 | 31.82 | 9.37 |
| 1980-81 | | | | | | | | | |
| Total | 156 | 94.91 | 14.67 | 54.17 | 13.27 | 47.30 | 13.74 | 29.48 | 9.87 |
| Male | 86 | 93.86 | 15.69 | 52.73 | 13.94 | 43.52 | 14.20 | 28.73 | 10.10 |
| Female | 70 | 96.20 | 13.18 | 55.93 | 12.26 | 51.94 | 11.67 | 30.40 | 9.58 |

Table 7.3. Mean Mental Ability and Mean Educational Achievement for Four Successive Grade 12 Groups: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|---------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | | | |
| Total | 126 | 102.01 | 16.97 | 54.82 | 15.39 | 47.64 | 13.07 | 29.38 | 10.61 |
| Male | 59 | 105.53 | 17.13 | 55.07 | 16.50 | 45.14 | 13.83 | 31.08 | 10.51 |
| Female | 57 | 98.37 | 16.16 | 54.56 | 14.29 | 50.23 | 11.79 | 27.61 | 10.52 |
| 1978-79 | | | | | | | | | |
| Total | 137 | 105.77 | 13.43 | 59.75 | 10.69 | 52.01 | 10.95 | 32.99 | 9.54 |
| Male | 60 | 107.33 | 11.24 | 58.80 | 10.94 | 48.72 | 11.38 | 33.02 | 9.44 |
| Female | 77 | 104.55 | 14.88 | 60.49 | 10.50 | 54.57 | 9.95 | 32.98 | 9.68 |
| 1979-80 | | | | | | | | | |
| Total | 145 | 104.52 | 13.79 | 58.79 | 13.94 | 51.83 | 12.53 | 31.99 | 10.52 |
| Male | 73 | 103.51 | 14.44 | 56.40 | 16.41 | 48.27 | 13.43 | 31.26 | 10.86 |
| Female | 72 | 105.54 | 13.12 | 61.21 | 10.46 | 55.43 | 10.44 | 32.72 | 10.19 |
| 1980-81 | | | | | | | | | |
| Total | 110 | 105.78 | 14.03 | 57.46 | 13.02 | 51.26 | 12.51 | 32.26 | 10.38 |
| Male | 55 | 106.87 | 14.96 | 56.44 | 15.02 | 46.62 | 13.96 | 31.31 | 11.55 |
| Female | 55 | 104.69 | 13.09 | 58.49 | 10.69 | 55.91 | 8.77 | 33.22 | 9.07 |

Table 7.4. Adjusted Means in Educational Achievement for Four Successive Grade 10 Groups with Mental Ability Scores:
Hood River Valley High School

| | N | Reading | English | Math |
|---------|-----|---------|---------|-------|
| 1977-78 | | | | |
| Total | 195 | 47.85 | 43.04 | 25.99 |
| Male | 101 | 47.25 | 40.55 | 26.14 |
| Female | 94 | 48.49 | 45.72 | 25.84 |
| 1978-79 | | | | |
| Total | 160 | 46.20 | 41.56 | 24.50 |
| Male | 79 | 45.09 | 38.26 | 24.17 |
| Female | 81 | 47.29 | 44.77 | 24.81 |
| 1979-80 | | | | |
| Total | 173 | 53.66 | 47.74 | 29.43 |
| Male | 92 | 52.73 | 44.31 | 28.79 |
| Female | 81 | 54.72 | 51.64 | 30.16 |
| 1980-81 | | | | |
| Total | 132 | 52.85 | 49.14 | 28.91 |
| Male | 61 | 50.63 | 45.24 | 28.24 |
| Female | 71 | 54.76 | 52.49 | 29.48 |

Table 7.5. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 10 Groups with Mental Ability Scores: Hood River Valley High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|-----------|---------|---------|-------|----------|-------|
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 651 | 659 |
| Mean Square | 62153.33 | 2038.11 | 920.50 | 56.47 | 95.50 | 191 |
| F | 650.82 | 21.34 | 9.64 | .59 | | |
| P | <.001 | <.001 | .002 | .621 | | |
| <u>English</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 651 | 659 |
| Mean Square | 52075.07 | 1887.70 | 6927.60 | 44.92 | 85.69 | 171 |
| F | 607.75 | 22.03 | 80.85 | .52 | | |
| P | <.001 | <.001 | <.001 | .666 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 651 | 659 |
| Mean Square | 32241.82 | 841.24 | 88.04 | 25.87 | 44.69 | 89 |
| F | 721.44 | 18.82 | 1.97 | .58 | | |
| P | <.001 | <.001 | .161 | .629 | | |

Table 7.6. Adjusted Means in Educational Achievement for Four Successive Grade 11 Groups with Mental Ability Scores; Hood River Valley High School

| | N | Reading | English | Math |
|---------|-----|---------|---------|-------|
| 1977-78 | | | | |
| Total | 151 | 54.10 | 47.32 | 29.49 |
| Male | 66 | 52.94 | 43.39 | 29.19 |
| Female | 85 | 54.99 | 50.38 | 29.71 |
| 1978-79 | | | | |
| Total | 169 | 55.42 | 48.64 | 30.18 |
| Male | 88 | 54.87 | 45.46 | 29.38 |
| Female | 81 | 56.01 | 52.10 | 31.05 |
| 1979-80 | | | | |
| Total | 113 | 52.81 | 46.67 | 30.00 |
| Male | 57 | 52.24 | 43.27 | 29.92 |
| Female | 56 | 53.39 | 50.19 | 30.09 |
| 1980-81 | | | | |
| Total | 156 | 58.55 | 51.40 | 32.88 |
| Male | 86 | 57.77 | 48.24 | 32.64 |
| Female | 70 | 59.52 | 55.29 | 33.17 |

Table 7.7. Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 11 Groups with Mental Ability Scores: Hood River Valley High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|-----------|---------|---------|-------|----------|--------|
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 580 | 588 |
| Mean Square | 43166.68 | 812.01 | 330.20 | 7.54 | 93.58 | 167.69 |
| F | 461.28 | 8.68 | 3.53 | .08 | | |
| P | .001 | <.001 | .061 | .971 | | |
| <u>English</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 581 | 589 |
| Mean Square | 38402.15 | 721.39 | 6829.63 | 1.35 | 83.69 | 161.84 |
| F | 458.84 | 8.62 | 81.60 | .02 | | |
| P | <.001 | <.001 | <.001 | .997 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 581 | 589 |
| Mean Square | 26321.99 | 327.58 | 75.61 | 16.37 | 50.52 | 96.36 |
| F | 521.01 | 6.48 | 1.50 | .32 | | |
| P | <.001 | <.001 | .222 | .808 | | |

Table 7.8. Adjusted Means in Educational Achievement for Four Successive Grade 12 Groups with Mental Ability Scores:
Hood River Valley High School

| | N | Reading | English | Math |
|---------|-----|---------|---------|-------|
| 1977-78 | | | | |
| Total | 116 | 56.34 | 49.05 | 30.64 |
| Male | 59 | 54.49 | 44.60 | 30.61 |
| Female | 57 | 58.26 | 53.66 | 30.67 |
| 1978-79 | | | | |
| Total | 137 | 59.03 | 51.34 | 32.39 |
| Male | 60 | 57.14 | 47.18 | 31.64 |
| Female | 77 | 60.50 | 54.58 | 32.97 |
| 1979-80 | | | | |
| Total | 145 | 58.81 | 51.85 | 32.00 |
| Male | 73 | 57.92 | 48.85 | 31.78 |
| Female | 72 | 60.62 | 54.88 | 32.23 |
| 1980-81 | | | | |
| Total | 110 | 56.73 | 50.58 | 31.66 |
| Male | 55 | 55.05 | 45.33 | 30.16 |
| Female | 55 | 58.41 | 55.83 | 33.15 |

Table 7 : Tests of Significance (ANCOVA) of Differences in Educational Achievement for Four Successive Grade 12 Groups with Mental Ability Scores: Hood River Valley High School

| Source | Covariate | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|-----------|---------|---------|--------|----------|--------|
| <u>Reading</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 499 | 507 |
| Mean Square | 37411.75 | 216.83 | 1538.34 | 1.21 | 101.69 | 179.33 |
| F | 367.89 | 2.13 | 15.13 | .01 | | |
| P | <.001 | .095 | <.001 | .998 | | |
| <u>English</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 499 | 507 |
| Mean Square | 32057.02 | 162.96 | 8429.05 | 118.26 | 74.95 | 152.13 |
| F | 427.71 | 2.17 | 112.46 | 1.53 | | |
| P | <.001 | .090 | <.001 | .194 | | |
| <u>Math</u> | | | | | | |
| Degrees of Freedom | 1 | 3 | 1 | 3 | 499 | 507 |
| Mean Square | 25514.84 | 64.06 | 180.84 | 48.44 | 54.05 | 106.34 |
| F | 472.03 | 1.85 | 3.35 | .90 | | |
| P | <.001 | .515 | .068 | .443 | | |

Table 7.10. Mean Educational Achievement for Four Successive Grade 10 Groups without Mental Ability Scores:
Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 48 | 47.65 | 13.99 | 42.23 | 13.52 | 24.27 | 9.09 |
| Male | 22 | 43.50 | 14.18 | 39.00 | 13.61 | 23.64 | 9.19 |
| Female | 26 | 51.15 | 13.07 | 44.96 | 13.08 | 24.81 | 9.14 |
| 1978-79 | | | | | | | |
| Total | 44 | 46.66 | 18.45 | 42.70 | 16.09 | 25.48 | 9.94 |
| Male | 20 | 48.55 | 17.91 | 41.35 | 15.55 | 27.90 | 10.76 |
| Female | 24 | 45.08 | 19.12 | 43.83 | 16.77 | 23.46 | 8.92 |
| 1979-80 | | | | | | | |
| Total | 34 | 48.74 | 16.25 | 40.53 | 15.84 | 25.85 | 10.88 |
| Male | 21 | 51.86 | 16.64 | 40.86 | 16.33 | 26.24 | 10.88 |
| Female | 13 | 43.69 | 14.85 | 40.00 | 15.67 | 25.23 | 11.29 |
| 1980-81 | | | | | | | |
| Total | 49 | 49.76 | 14.84 | 43.47 | 14.02 | 26.69 | 9.10 |
| Male | 29 | 49.59 | 15.24 | 41.66 | 15.76 | 28.72 | 9.58 |
| Female | 20 | 50.00 | 14.64 | 46.10 | 10.88 | 23.75 | 7.65 |

Table 7.11. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 10 Groups without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|---------|--------|--------|----------|--------|
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 167 | 174 |
| Mean Square | 79.66 | 1.24 | 455.09 | 250.05 | 249.26 |
| F | .32 | .01 | 1.82 | | |
| P | .812 | .944 | .145 | | |
| <u>English</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 167 | 174 |
| Mean Square | 57.41 | 484.79 | 81.92 | 219.84 | 216.23 |
| F | .26 | 2.21 | .37 | | |
| P | .853 | .139 | .773 | | |
| <u>Math</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 167 | 174 |
| Mean Square | 35.80 | 241.14 | 97.15 | 92.64 | 92.81 |
| F | .39 | 2.60 | 1.05 | | |
| P | .763 | .11 | .373 | | |

Table 7.12. Mean Educational Achievement for Four Successive Grade 11 Groups without Mental Ability Scores:
Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 57 | 55.49 | 12.27 | 47.43 | 12.04 | 27.95 | 9.97 |
| Male | 29 | 56.10 | 12.35 | 46.07 | 11.66 | 30.07 | 10.09 |
| Female | 28 | 54.86 | 12.38 | 48.89 | 12.49 | 25.67 | 9.50 |
| 1978-79 | | | | | | | |
| Total | 47 | 51.60 | 12.01 | 46.70 | 11.84 | 28.19 | 9.69 |
| Male | 19 | 53.00 | 10.97 | 44.89 | 11.97 | 28.89 | 9.87 |
| Female | 28 | 50.64 | 12.78 | 47.93 | 11.82 | 27.71 | 9.71 |
| 1979-80 | | | | | | | |
| Total | 36 | 57.86 | 11.00 | 50.44 | 11.71 | 30.56 | 9.64 |
| Male | 16 | 55.38 | 11.75 | 45.50 | 13.31 | 29.38 | 10.67 |
| Female | 20 | 59.85 | 10.21 | 54.40 | 8.71 | 31.50 | 8.90 |
| 1980-81 | | | | | | | |
| Total | 43 | 48.07 | 19.91 | 39.19 | 17.43 | 24.42 | 11.62 |
| Male | 30 | 47.90 | 22.03 | 37.27 | 17.85 | 24.13 | 12.38 |
| Female | 13 | 48.46 | 14.64 | 43.62 | 16.22 | 25.08 | 10.07 |

Table 7.13. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 11 Groups without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|---------|---------|-------|----------|--------|
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 175 | 182 |
| Mean Square | 763.22 | .01 | 88.63 | 203.96 | 210.40 |
| F | 3.74 | .01 | .44 | | |
| P | .012 | .996 | .729 | | |
| <u>English</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 174 | 181 |
| Mean Square | 719.39 | 1023.90 | 87.04 | 176.43 | 192.41 |
| F | 4.08 | 5.80 | .49 | | |
| P | .008 | .017 | .687 | | |
| <u>Math</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 174 | 181 |
| Mean Square | 273.42 | 52.09 | 94.29 | 105.60 | 107.63 |
| F | 2.59 | .49 | .89 | | |
| P | .055 | .483 | .446 | | |

Table 7.14. Mean Educational Achievement for Four Successive Grade 12 Groups without Mental Ability Scores:
Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 35 | 51.66 | 13.60 | 43.57 | 12.91 | 26.31 | 9.98 |
| Male | 18 | 54.50 | 13.55 | 43.83 | 12.66 | 28.89 | 10.44 |
| Female | 17 | 48.65 | 13.38 | 43.29 | 13.55 | 23.59 | 8.98 |
| 1978-79 | | | | | | | |
| Total | 62 | 55.65 | 15.78 | 46.94 | 14.40 | 28.03 | 10.45 |
| Male | 33 | 55.67 | 16.45 | 46.55 | 13.58 | 30.18 | 10.87 |
| Female | 29 | 55.62 | 15.26 | 47.38 | 15.51 | 25.59 | 9.55 |
| 1979-80 | | | | | | | |
| Total | 35 | 58.14 | 12.47 | 51.37 | 10.69 | 31.71 | 9.18 |
| Male | 15 | 61.47 | 12.29 | 52.13 | 11.06 | 33.47 | 7.81 |
| Female | 20 | 55.65 | 12.31 | 50.80 | 10.65 | 30.40 | 10.09 |
| 1980-81 | | | | | | | |
| Total | 40 | 58.73 | 12.33 | 51.18 | 11.52 | 31.05 | 9.10 |
| Male | 18 | 56.83 | 12.71 | 48.56 | 10.38 | 32.28 | 9.03 |
| Female | 22 | 60.27 | 12.08 | 53.32 | 12.19 | 30.05 | 9.25 |

Table 7.15. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 12 Groups without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Y X S | Residual | Total |
|--------------------|---------|--------|--------|----------|--------|
| <u>Reading</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 164 | 171 |
| Mean Square | 383.12 | 107.43 | 199.74 | 194.99 | 197.72 |
| F | 1.99 | .55 | 1.02 | | |
| P | .117 | .459 | .383 | | |
| <u>English</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 164 | 171 |
| Mean Square | 502.67 | 45.14 | 69.31 | 165.39 | 169.19 |
| F | 3.04 | .27 | .42 | | |
| P | .031 | .602 | .740 | | |
| <u>Math</u> | | | | | |
| Degrees of Freedom | 3 | 1 | 3 | 164 | 171 |
| Mean Square | 280.31 | 643.49 | 19.37 | 94.18 | 98.71 |
| F | 2.98 | 6.83 | .21 | | |
| P | .033 | .010 | .892 | | |

Table 7.16. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 10, Grade 11, and Grade 12 Groups without Mental Ability Scores: Hood River Valley High School

| | Group (C) | Sex (S) | S X G | 1977-78 vs 1978-79 | 1977-78 vs 1979-80 | 1977-78 vs 1980-81 | 1978-79 vs 1979-80 | 1978-79 vs 1980-81 | 1979-80 vs 1980-81 |
|-----------------|--------------|-------------------|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <u>Grade 10</u> | | | | | | | | | |
| Reading | NS | NS | NS | | | | | | |
| English | NS | NS | NS | | | | | | |
| Math | NS | NS | NS | | | | | | |
| <u>Grade 11</u> | | | | | | | | | |
| Reading | .012 | NS | NS | NS | NS | NS | NS | NS | Sign ³ |
| English | .008 | .017 ¹ | NS | NS | NS | Sign ³ | NS | NS | Sign ³ |
| Math | NS | NS | | | | | | | |
| <u>Grade 12</u> | | | | | | | | | |
| Reading | NS | NS | NS | | | | | | |
| English | .031 | NS | NS | NS | NS | NS | NS | NS | NS |
| Math | .033 | .010 ² | NS | NS | NS | NS | NS | NS | NS |

¹ The mean achievement of the females was significantly higher than the mean of the males.

² The mean achievement of the males was significantly higher than the mean of the females.

³ The mean of the group of the prior year was significantly higher than the mean of the group of the later year.

Table 7.17. Mean Educational Achievement for Four Successive Grade 10 Groups with and without Mental Ability Scores: Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|-----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 243 | 49.24 | 14.50 | 44.19 | 13.83 | 26.69 | 9.81 |
| Male | 123 | 47.09 | 15.68 | 40.74 | 14.60 | 26.06 | 10.53 |
| Female | 120 | 51.45 | 12.88 | 47.73 | 12.07 | 27.33 | 9.03 |
| 1978-79 | | | | | | | |
| Total | 204 | 48.78 | 14.65 | 44.07 | 13.64 | 26.50 | 9.85 |
| Male | 99 | 49.15 | 15.40 | 41.97 | 14.12 | 27.35 | 10.04 |
| Female | 105 | 48.43 | 13.97 | 46.06 | 12.93 | 25.69 | 9.64 |
| 1979-80 | | | | | | | |
| Total | 207 | 50.81 | 13.46 | 44.69 | 13.31 | 27.37 | 9.65 |
| Male | 113 | 49.95 | 13.94 | 41.27 | 13.49 | 26.42 | 9.90 |
| Female | 94 | 51.85 | 12.85 | 48.80 | 11.92 | 28.51 | 9.25 |
| 1980-81 | | | | | | | |
| Total | 181 | 49.63 | 14.64 | 45.43 | 14.03 | 26.59 | 9.51 |
| Male | 90 | 47.48 | 14.52 | 41.51 | 14.76 | 26.37 | 10.34 |
| Female | 91 | 51.76 | 14.53 | 49.30 | 12.16 | 26.81 | 8.67 |

Table 7.18. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 10 Groups with and without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|--------------------|---------|---------|----------|--------|-------|--------|-----------|----------|--------|
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 819 | 834 |
| Mean Square | 74.50 | 192.08 | 536.01 | 492.75 | 95.37 | 581.12 | 345.21 | 202.79 | 204.83 |
| | .37 | .95 | 2.64 | 2.43 | .47 | 2.87 | 1.70 | | |
| | .777 | .331 | .104 | .064 | .703 | .091 | .165 | | |
| <u>English</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 819 | 834 |
| Mean Square | 80.09 | 3578.23 | 1181.82 | 94.45 | 78.12 | 636.13 | 105.28 | 176.52 | 187.29 |
| | .45 | 20.27 | 6.70 | .54 | .44 | 3.60 | .60 | | |
| | .715 | <.001 | .010 | .658 | .723 | .058 | .617 | | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 819 | 834 |
| Mean Square | 93.19 | 27.89 | 341.69 | 116.60 | 54.54 | 454.54 | 77.21 | 93.78 | 94.18 |
| | .99 | .30 | 3.64 | 1.24 | .58 | 4.85 | .82 | | |
| | .420 | .586 | .057 | .293 | .627 | .028 | .481 | | |

Table 7.19. Mean Educational Achievement for Four Successive Grade 11 Groups with and without Mental Ability Scores: Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|-----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 208 | 56.00 | 11.87 | 48.80 | 11.39 | 30.27 | 9.29 |
| Male | 95 | 56.00 | 11.20 | 46.19 | 11.58 | 31.11 | 9.21 |
| Female | 113 | 55.99 | 12.46 | 51.02 | 10.79 | 29.56 | 9.35 |
| 1978-79 | | | | | | | |
| Total | 216 | 54.80 | 13.37 | 48.44 | 13.33 | 29.93 | 10.32 |
| Male | 107 | 53.99 | 14.63 | 44.86 | 13.75 | 28.88 | 10.89 |
| Female | 109 | 55.59 | 12.01 | 51.95 | 11.97 | 30.95 | 9.66 |
| 1979-80 | | | | | | | |
| Total | 149 | 56.20 | 12.59 | 49.53 | 11.67 | 31.75 | 9.75 |
| Male | 73 | 55.67 | 14.49 | 46.14 | 12.82 | 31.77 | 10.35 |
| Female | 76 | 56.71 | 10.52 | 52.84 | 9.40 | 31.74 | 9.19 |
| 1980-81 | | | | | | | |
| Total | 199 | 52.85 | 15.11 | 45.55 | 14.95 | 28.39 | 10.45 |
| Male | 116 | 51.48 | 16.45 | 41.91 | 15.40 | 27.54 | 10.87 |
| Female | 83 | 54.76 | 12.86 | 50.64 | 12.74 | 29.57 | 9.79 |

Table 7.20. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 11 Groups with and without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|--------------------|---------|---------|----------|--------|--------|--------|-----------|----------|--------|
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 756 | 771 |
| Mean Square | 696.97 | 128.65 | 630.51 | 50.53 | 374.62 | 52.73 | 134.46 | 176.11 | 178.43 |
| F | 3.96 | .73 | 3.58 | .29 | 2.13 | .30 | .76 | | |
| P | .008 | .393 | .059 | .835 | .095 | .584 | .515 | | |
| <u>English</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 756 | 771 |
| Mean Square | 650.45 | 4943.44 | 945.80 | 85.15 | 327.75 | 105.62 | 91.30 | 155.72 | 170.18 |
| F | 4.18 | 31.75 | 6.07 | .55 | 2.11 | .68 | .59 | | |
| P | .006 | <.001 | .014 | .650 | .098 | .410 | .624 | | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 756 | 771 |
| Mean Square | 337.06 | 1.95 | 1191.24 | 124.01 | 62.65 | 73.09 | 80.46 | 97.95 | 100.49 |
| F | 3.44 | .02 | 12.16 | 1.27 | .64 | .75 | .82 | | |
| P | .016 | .888 | .001 | .285 | .590 | .388 | .482 | | |

Table 7.21. Mean Educational Achievement for Four Successive Grade 12 Groups with and without Mental Ability Scores:
Hood River Valley High School

| | N | Reading | | English | | Math | |
|---------|-----|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1977-78 | | | | | | | |
| Total | 151 | 54.09 | 15.01 | 46.70 | 13.10 | 28.67 | 10.52 |
| Male | 77 | 54.94 | 15.77 | 44.83 | 13.50 | 30.57 | 10.47 |
| Female | 74 | 53.20 | 14.22 | 48.64 | 12.47 | 26.69 | 10.15 |
| 1978-79 | | | | | | | |
| Total | 199 | 58.47 | 12.60 | 50.43 | 12.32 | 31.44 | 10.07 |
| Male | 93 | 57.69 | 13.16 | 47.95 | 12.17 | 32.01 | 10.00 |
| Female | 106 | 59.16 | 12.11 | 52.60 | 12.09 | 30.94 | 10.15 |
| 1979-80 | | | | | | | |
| Total | 180 | 58.66 | 13.64 | 51.74 | 12.16 | 31.93 | 10.25 |
| Male | 88 | 57.26 | 15.84 | 48.93 | 13.08 | 31.64 | 10.40 |
| Female | 92 | 60.00 | 11.06 | 54.42 | 10.61 | 32.22 | 10.16 |
| 1980-81 | | | | | | | |
| Total | 150 | 57.80 | 12.81 | 51.24 | 12.21 | 31.94 | 10.04 |
| Male | 73 | 56.53 | 14.40 | 47.10 | 13.13 | 31.55 | 10.93 |
| Female | 77 | 59.00 | 11.05 | 55.17 | 9.85 | 32.31 | 9.17 |

Table 7.22. Tests of Significance (ANOVA) of Differences in Educational Achievement for Four Successive Grade 12 Groups with and without Mental Ability Scores: Hood River Valley High School

| Source | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | Residual | Total |
|--------------------|---------|---------|----------|--------|--------|---------|-----------|----------|--------|
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 664 | 679 |
| Mean Square | 686.32 | .10 | 312.04 | 175.07 | 190.46 | 507.93 | 193.26 | 180.93 | 184.31 |
| F | 3.79 | <.01 | 1.73 | .97 | 1.05 | 2.81 | 1.07 | | |
| p | .010 | .98 | .190 | .407 | .369 | .094 | .362 | | |
| <u>English</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 664 | 679 |
| Mean Square | 812.18 | 1844.73 | 689.46 | 131.85 | 177.30 | 1067.37 | 22.85 | 145.45 | 157.54 |
| F | 5.58 | 12.68 | 4.74 | .91 | 1.22 | 7.34 | .16 | | |
| p | .001 | <.001 | .030 | .438 | .302 | .007 | .925 | | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 664 | 679 |
| Mean Square | 398.70 | 448.89 | 669.81 | 98.32 | 172.34 | 430.91 | 12.08 | 102.31 | 105.53 |
| F | 3.90 | 4.39 | 6.55 | .96 | 1.69 | 4.21 | .12 | | |
| p | .009 | .037 | .011 | .411 | .169 | .041 | .949 | | |

Table 7.23. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 10 Groups with and without Mental Ability Scores: Hood River Valley High School

| | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G |
|---------|---------|--------------------|-------------------|-------|-------|-------|-----------|
| Reading | NS | NS | NS | NS | NS | NS | NS |
| English | NS | <.001 ¹ | .010 ² | NS | NS | NS | NS |
| Math | NS | NS | NS | NS | NS | .028 | NS |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean of the group with mental ability scores was significantly higher than the mean of the group without mental ability scores.

Table 7.24. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 11 Groups with and without Mental Ability Scores: Hood River Valley High School

| | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | 1977-78 | 1977-78 | 1977-78 | 1978-79 | 1978-79 | 1979-80 |
|---------|---------|--------------------|-------------------|-------|-------|-------|-----------|---------|---------|---------|---------|---------|-------------------|
| | | | | | | | | VS | VS | VS | VS | VS | VS |
| | | | | | | | | 1978-79 | 1979-80 | 1980-81 | 1979-80 | 1980-81 | 1980-81 |
| Reading | .008 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| English | .006 | <.001 ¹ | .014 ² | NS | NS | NS | NS | NS | NS | NS | NS | NS | Sign ³ |
| Math | .016 | NS | .001 ² | NS | NS | NS | NS | NS | NS | NS | NS | NS | Sign ³ |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean of the group with mental ability scores was significantly higher than the mean of the group without mental ability scores.

³The mean of the group of the prior year was significantly higher than the mean of the group of the later year.

Table 7.25. Summary of Differences in Educational Achievement and Post-hoc Comparisons for Four Successive Grade 12 Groups with and without Mental Ability Scores: Hood River Valley High School

| | Year(Y) | Sex(S) | Group(G) | Y X S | Y X G | S X G | Y X S X G | 1977-78 | 1977-78 | 1977-78 | 1978-79 | 1978-79 | 1979-80 |
|---------|---------|--------------------|-------------------|-------|-------|-------------------|-----------|-------------------|-------------------|-------------------|---------|---------|---------|
| | | | | | | | | vs | vs | vs | vs | vs | vs |
| | | | | | | | | 1978-79 | 1979-80 | 1980-81 | 1979-80 | 1980-81 | 1980-81 |
| Reading | .010 | NS | NS | NS | NS | NS | NS | Sign ⁶ | Sign ⁶ | NS | NS | NS | NS |
| English | .001 | <.001 ¹ | .030 ² | NS | NS | .007 ³ | NS | Sign ⁶ | Sign ⁶ | Sign ⁶ | NS | NS | NS |
| Math | .009 | .037 ⁴ | .011 ² | NS | NS | .041 ⁵ | NS | NS | Sign ⁶ | Sign ⁶ | NS | NS | NS |

¹The mean achievement of the females was significantly higher than the mean of the males.

²The mean of the group with mental ability scores was significantly higher than the mean of the group without mental ability scores.

³The mean achievement of the females with mental ability scores was significantly higher than the mean of the males with mental ability scores.

⁴The mean achievement of the males was significantly higher than the mean of the females.

⁵The mean achievement of the males without mental ability scores was significantly higher than the mean of the females without mental ability scores.

⁶The mean of the group of the later year was significantly higher than the mean of the group of the prior year.

Table 7.26. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 1: Hood River Valley High School

| 1977-1978 | Mental Ability | | | Reading | | English | | Math | |
|-------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 10 | | | | | | | | | |
| Total | 134 | 104.49 | 13.83 | 52.65 | 13.94 | 47.26 | 13.08 | 29.13 | 9.68 |
| Male | 67 | 103.07 | 14.42 | 50.97 | 15.32 | 43.28 | 13.94 | 28.28 | 10.86 |
| Female | 67 | 105.91 | 13.16 | 54.33 | 12.31 | 51.24 | 10.89 | 29.99 | 8.34 |
| 1st Quarter | | | | | | | | | |
| Total | 34 | 85.82 | 5.11 | 35.56 | 9.24 | 34.09 | 8.90 | 18.00 | 6.10 |
| Male | 21 | 86.43 | 4.95 | 34.86 | 10.60 | 31.38 | 7.97 | 17.43 | 5.71 |
| Female | 13 | 84.85 | 5.43 | 36.69 | 6.71 | 38.46 | 8.86 | 18.92 | 6.81 |
| 2nd Quarter | | | | | | | | | |
| Total | 33 | 100.36 | 3.49 | 51.33 | 9.16 | 42.64 | 11.95 | 27.48 | 7.37 |
| Male | 18 | 100.78 | 3.04 | 51.17 | 10.82 | 39.56 | 13.27 | 26.78 | 8.77 |
| Female | 15 | 99.87 | 4.02 | 51.53 | 7.04 | 46.33 | 9.27 | 28.33 | 5.42 |
| 3rd Quarter | | | | | | | | | |
| Total | 35 | 110.86 | 3.21 | 59.29 | 8.22 | 53.89 | 7.32 | 33.40 | 5.95 |
| Male | 14 | 110.50 | 3.65 | 58.93 | 8.67 | 52.86 | 8.86 | 33.93 | 6.04 |
| Female | 21 | 111.10 | 2.95 | 59.52 | 8.12 | 54.57 | 6.24 | 33.05 | 6.00 |
| 4th Quarter | | | | | | | | | |
| Total | 32 | 121.63 | 4.40 | 64.91 | 7.45 | 58.78 | 6.65 | 38.00 | 5.23 |
| Male | 14 | 123.57 | 5.05 | 66.93 | 5.27 | 56.36 | 7.03 | 40.86 | 3.63 |
| Female | 18 | 120.11 | 3.20 | 63.33 | 8.61 | 60.67 | 5.84 | 35.78 | 5.28 |

Table 7.26. (Continued):

| | Mental Ability | | | Reading | | English | | Math | |
|-------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| 1978-1979 | | | | | | | | | |
| Grade 11 | | | | | | | | | |
| Total | 134 | 104.49 | 13.83 | 57.19 | 12.89 | 51.07 | 12.60 | 31.91 | 10.09 |
| Male | 67 | 103.07 | 14.42 | 55.25 | 14.66 | 46.58 | 13.13 | 30.85 | 10.93 |
| Female | 67 | 105.91 | 13.16 | 59.13 | 10.59 | 55.57 | 10.32 | 32.97 | 9.14 |
| 1st Quarter | | | | | | | | | |
| Total | 34 | 85.82 | 5.11 | 43.74 | 10.26 | 38.32 | 9.84 | 22.06 | 6.97 |
| Male | 21 | 86.43 | 4.95 | 42.57 | 12.14 | 36.24 | 9.73 | 21.71 | 6.49 |
| Female | 13 | 84.85 | 5.43 | 45.62 | 6.14 | 41.69 | 9.42 | 22.62 | 7.91 |
| 2nd Quarter | | | | | | | | | |
| Total | 33 | 100.36 | 3.49 | 53.94 | 10.05 | 47.85 | 11.21 | 28.27 | 8.85 |
| Male | 18 | 100.78 | 3.04 | 52.39 | 12.57 | 43.22 | 12.59 | 26.11 | 9.15 |
| Female | 15 | 99.87 | 4.02 | 55.80 | 5.67 | 53.40 | 5.85 | 30.87 | 8.02 |
| 3rd Quarter | | | | | | | | | |
| Total | 35 | 110.86 | 3.21 | 62.77 | 7.64 | 57.26 | 7.40 | 36.71 | 6.82 |
| Male | 14 | 110.50 | 3.65 | 62.21 | 6.60 | 54.79 | 8.69 | 38.21 | 5.58 |
| Female | 21 | 111.10 | 2.95 | 63.14 | 8.40 | 58.90 | 6.07 | 35.71 | 7.50 |
| 4th Quarter | | | | | | | | | |
| Total | 32 | 121.63 | 4.40 | 68.75 | 6.99 | 61.19 | 7.05 | 40.88 | 4.89 |
| Male | 14 | 123.57 | 5.05 | 71.00 | 4.82 | 58.21 | 6.29 | 43.29 | 3.17 |
| Female | 18 | 120.11 | 3.20 | 67.00 | 8.00 | 63.50 | 6.88 | 39.00 | 5.24 |

Table 7.26. (Continued):

| 1979-1980 | Mental Ability | | | Reading | | English | | Math | |
|--------------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 12 | | | | | | | | | |
| Total | 134 | 104.49 | 13.83 | 58.99 | 13.76 | 51.54 | 12.85 | 32.21 | 10.57 |
| Male | 67 | 103.07 | 14.42 | 56.40 | 16.06 | 47.64 | 13.73 | 31.24 | 10.98 |
| Female | 67 | 105.91 | 13.16 | 61.58 | 10.50 | 55.43 | 10.65 | 33.18 | 10.14 |
| 1st Quarter | | | | | | | | | |
| Total | 34 | 85.82 | 5.11 | 45.18 | 9.37 | 37.53 | 10.46 | 21.21 | 7.87 |
| Male | 21 | 86.43 | 4.95 | 43.05 | 10.43 | 35.29 | 10.12 | 21.52 | 6.92 |
| Female | 13 | 84.85 | 5.43 | 48.62 | 6.27 | 41.15 | 10.34 | 20.69 | 9.50 |
| 2nd Quarter | | | | | | | | | |
| Total | 33 | 100.36 | 3.49 | 55.30 | 14.07 | 48.64 | 10.57 | 29.39 | 8.92 |
| Male | 18 | 100.78 | 3.04 | 52.83 | 17.82 | 45.72 | 11.85 | 28.78 | 9.69 |
| Female | 15 | 99.87 | 4.02 | 58.27 | 7.05 | 52.13 | 7.82 | 30.13 | 8.16 |
| 3rd Quarter | | | | | | | | | |
| Total | 35 | 110.86 | 3.21 | 65.43 | 7.99 | 58.00 | 7.34 | 36.74 | 6.31 |
| Male | 14 | 110.50 | 3.65 | 66.00 | 7.62 | 56.21 | 9.31 | 36.00 | 6.54 |
| Female | 21 | 111.10 | 2.95 | 65.05 | 8.39 | 59.19 | 5.62 | 37.24 | 6.26 |
| 4th Quarter | | | | | | | | | |
| Total | 32 | 121.63 | 4.40 | 70.44 | 6.27 | 62.34 | 5.10 | 41.84 | 5.24 |
| Male | 14 | 123.57 | 5.05 | 71.43 | 4.52 | 60.07 | 5.69 | 44.21 | 2.42 |
| Female | 18 | 120.11 | 3.20 | 69.67 | 7.38 | 64.11 | 3.88 | 40.00 | 6.12 |

Table 7.27. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 1: Hood River Valley High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|--------------------|---------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 2 | 2 | 6 | 6 | 252 |
| Mean Square | 79.96 | 12640.18 | 223.49 | 208.55 | 1447.58 | 41.96 | 70.93 | 20.37 | 20.27 |
| F | .38 | 60.61 | 1.07 | | 71.41 | 2.07 | 3.50 | 1.00 | |
| P | .537 | <.001 | .364 | | <.001 | .128 | .002 | .423 | |
| <u>English</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 2 | 2 | 6 | 6 | 252 |
| Mean Square | 2789.15 | 10180.16 | 107.64 | 184.83 | 689.09 | 20.25 | 21.03 | 11.95 | 17.13 |
| F | 15.09 | 55.08 | .58 | | 40.22 | 1.18 | 1.23 | .70 | |
| P | <.001 | <.001 | .628 | | <.001 | .308 | .292 | .652 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 126 | 2 | 2 | 6 | 6 | 252 |
| Mean Square | 28.50 | 7341.52 | 212.82 | 109.89 | 357.67 | 1.74 | 18.44 | 23.75 | 14.22 |
| F | .26 | 66.81 | 1.94 | | 25.15 | .12 | 1.30 | 1.67 | |
| P | .611 | <.001 | .127 | | <.001 | .885 | .259 | .129 | |

Table 7.28. Mean Mental Ability and Mean Educational Achievement for Longitudinal Cohort 2: Hood River Valley High School

| 1978-1979 | Mental Ability | | | Reading | | English | | Math | |
|-------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 10 | | | | | | | | | |
| Total | 100 | 106.30 | 13.95 | 51.33 | 12.86 | 47.34 | 12.40 | 29.22 | 9.43 |
| Male | 50 | 107.02 | 15.04 | 50.58 | 14.79 | 44.36 | 14.44 | 29.54 | 10.11 |
| Female | 50 | 105.58 | 12.88 | 52.08 | 10.69 | 50.32 | 9.17 | 28.90 | 8.79 |
| 1st Quarter | | | | | | | | | |
| Total | 25 | 88.76 | 8.58 | 39.68 | 11.15 | 37.68 | 11.88 | 21.72 | 8.21 |
| Male | 12 | 87.17 | 11.03 | 35.08 | 12.05 | 32.58 | 13.34 | 22.50 | 9.74 |
| Female | 13 | 90.23 | 5.56 | 43.92 | 8.66 | 42.38 | 8.31 | 21.00 | 6.84 |
| 2nd Quarter | | | | | | | | | |
| Total | 25 | 101.68 | 2.32 | 48.04 | 7.97 | 44.96 | 9.98 | 26.08 | 8.11 |
| Male | 9 | 101.78 | 2.77 | 45.89 | 7.32 | 38.44 | 8.82 | 24.00 | 8.22 |
| Female | 16 | 101.63 | 2.13 | 49.25 | 8.28 | 48.63 | 8.83 | 27.25 | 8.08 |
| 3rd Quarter | | | | | | | | | |
| Total | 25 | 111.00 | 3.88 | 55.84 | 11.52 | 51.44 | 10.26 | 33.32 | 7.01 |
| Male | 14 | 109.79 | 3.77 | 55.57 | 12.82 | 48.21 | 12.26 | 31.71 | 9.38 |
| Female | 11 | 112.55 | 3.62 | 56.18 | 10.23 | 55.55 | 4.91 | 33.09 | 5.17 |
| 4th Quarter | | | | | | | | | |
| Total | 25 | 123.76 | 5.04 | 61.76 | 8.63 | 55.28 | 10.12 | 36.76 | 6.01 |
| Male | 15 | 123.47 | 5.10 | 61.13 | 10.19 | 53.73 | 12.48 | 36.47 | 6.65 |
| Female | 10 | 124.20 | 5.18 | 62.70 | 5.96 | 57.60 | 4.58 | 37.20 | 5.20 |

Table 7.28. (Continued):

| 1979-1980 | Mental Ability | | | Reading | | English | | Math | |
|--------------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 11 | | | | | | | | | |
| Total | 100 | 106.30 | 13.95 | 54.90 | 13.14 | 49.13 | 12.01 | 32.24 | 9.74 |
| Male | 50 | 107.02 | 15.04 | 54.20 | 15.13 | 46.12 | 13.12 | 32.86 | 10.94 |
| Female | 50 | 105.58 | 12.88 | 55.60 | 10.90 | 52.14 | 10.03 | 31.62 | 9.44 |
| 1st Quarter | | | | | | | | | |
| Total | 25 | 88.76 | 8.58 | 44.64 | 11.68 | 39.64 | 11.97 | 23.64 | 7.73 |
| Male | 12 | 87.17 | 11.03 | 39.50 | 12.77 | 33.42 | 11.02 | 24.58 | 8.72 |
| Female | 13 | 90.23 | 5.56 | 49.38 | 8.52 | 45.38 | 10.03 | 22.77 | 6.93 |
| 2nd Quarter | | | | | | | | | |
| Total | 25 | 101.68 | 2.32 | 49.88 | 9.18 | 47.76 | 9.91 | 29.08 | 9.29 |
| Male | 9 | 101.78 | 2.77 | 48.67 | 10.03 | 43.33 | 7.66 | 28.11 | 10.75 |
| Female | 16 | 101.63 | 2.13 | 50.56 | 8.94 | 50.25 | 10.36 | 29.63 | 8.69 |
| 3rd Quarter | | | | | | | | | |
| Total | 25 | 111.00 | 3.88 | 59.92 | 10.30 | 52.20 | 10.69 | 35.92 | 7.11 |
| Male | 14 | 109.79 | 3.77 | 60.50 | 11.31 | 48.64 | 11.95 | 35.86 | 8.28 |
| Female | 11 | 112.55 | 3.62 | 59.18 | 9.34 | 56.73 | 6.97 | 36.00 | 5.67 |
| 4th Quarter | | | | | | | | | |
| Total | 25 | 123.76 | 5.04 | 65.16 | 10.63 | 56.92 | 8.38 | 40.32 | 5.04 |
| Male | 15 | 123.47 | 5.10 | 63.40 | 12.70 | 55.60 | 9.76 | 39.53 | 6.09 |
| Female | 10 | 124.20 | 5.18 | 67.80 | 6.14 | 58.90 | 5.63 | 41.50 | 2.72 |

Table 7.28. (Continued):

| 1980-1981 | Mental Ability | | | Reading | | English | | Math | |
|--------------------|----------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| | N | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Grade 12 | | | | | | | | | |
| Total | 100 | 106.30 | 13.95 | 58.33 | 12.73 | 51.98 | 12.36 | 33.01 | 10.01 |
| Male | 50 | 107.02 | 15.04 | 57.10 | 14.89 | 47.10 | 14.03 | 32.26 | 10.96 |
| Female | 50 | 105.58 | 12.88 | 59.56 | 10.12 | 56.86 | 7.94 | 33.76 | 9.00 |
| 1st Quarter | | | | | | | | | |
| Total | 25 | 88.76 | 8.58 | 47.84 | 13.82 | 43.56 | 13.17 | 25.28 | 9.77 |
| Male | 12 | 87.17 | 11.03 | 41.83 | 15.21 | 34.50 | 11.35 | 23.75 | 11.43 |
| Female | 13 | 90.23 | 5.56 | 53.38 | 10.02 | 51.92 | 8.42 | 26.69 | 8.16 |
| 2nd Quarter | | | | | | | | | |
| Total | 25 | 101.68 | 2.32 | 55.08 | 8.87 | 51.20 | 9.32 | 29.64 | 9.71 |
| Male | 9 | 101.78 | 2.77 | 53.33 | 9.85 | 45.56 | 9.95 | 26.89 | 11.74 |
| Female | 16 | 101.63 | 2.13 | 56.06 | 8.44 | 54.38 | 7.50 | 31.19 | 8.38 |
| 3rd Quarter | | | | | | | | | |
| Total | 25 | 111.00 | 3.88 | 62.96 | 9.42 | 54.40 | 11.92 | 35.92 | 6.32 |
| Male | 14 | 109.79 | 3.77 | 62.14 | 10.14 | 49.14 | 12.97 | 34.93 | 7.10 |
| Female | 11 | 112.55 | 3.62 | 64.00 | 8.79 | 61.09 | 5.84 | 37.18 | 5.23 |
| 4th Quarter | | | | | | | | | |
| Total | 25 | 123.76 | 5.04 | 67.44 | 8.71 | 58.76 | 9.96 | 41.20 | 5.52 |
| Male | 15 | 123.47 | 5.10 | 66.87 | 10.36 | 56.20 | 12.03 | 39.80 | 6.58 |
| Female | 10 | 124.20 | 5.18 | 68.30 | 5.81 | 62.60 | 3.50 | 43.30 | 2.36 |

Table 7.29. Tests of Significance (Repeated Measures ANOVA) of Differences in Educational Achievement for Longitudinal Cohort 2: Hood River Valley High School

| Source | Sex(S) | Quarter(Q) | S X Q | Error | Gain(G) | G X S | G X Q | G X S X Q | Error |
|--------------------|---------|------------|--------|--------|---------|-------|-------|-----------|-------|
| <u>Reading</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 92 | 2 | 2 | 6 | 6 | 184 |
| Mean Square | 1101.91 | 6472.91 | 336.52 | 263.78 | 1191.52 | 4.47 | 16.26 | 14.18 | 21.49 |
| F | 4.18 | 24.54 | 1.28 | | 55.45 | .21 | .76 | .66 | |
| P | .044 | <.001 | .287 | | <.001 | .812 | .605 | .682 | |
| <u>English</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 92 | 2 | 2 | 6 | 6 | 184 |
| Mean Square | 5654.35 | 4261.89 | 223.88 | 249.77 | 560.05 | 97.00 | 15.87 | 21.71 | 18.02 |
| F | 22.64 | 17.06 | .90 | | 31.08 | 5.38 | .88 | 1.20 | |
| P | <.001 | <.001 | .446 | | <.001 | .005 | .510 | .306 | |
| <u>Math</u> | | | | | | | | | |
| Degrees of Freedom | 1 | 3 | 3 | 92 | 2 | 2 | 6 | 6 | 184 |
| Mean Square | 175.16 | 3740.68 | 32.06 | 149.14 | 396.43 | 53.49 | 6.07 | 6.57 | 15.91 |
| F | 1.17 | 25.08 | .21 | | 24.91 | 3.36 | .38 | .41 | |
| P | .281 | <.001 | .886 | | <.001 | .037 | .890 | .870 | |

Table 7.30. Adjusted Means in Educational Achievement for Longitudinal Cohort 1 and Cohort 2: Hood River Valley High School

| | N | Reading | English | Math |
|-----------------|-----|---------|---------|-------|
| <u>Cohort 1</u> | | | | |
| Total | 134 | 56.80 | 50.41 | 31.49 |
| Male | 67 | 55.69 | 47.12 | 31.26 |
| Female | 67 | 57.91 | 53.70 | 31.71 |
| <u>Cohort 2</u> | | | | |
| Total | 100 | 54.15 | 48.88 | 30.95 |
| Male | 50 | 52.77 | 44.83 | 30.64 |
| Female | 50 | 55.53 | 52.92 | 31.26 |

Table 7.31. Tests of Significance (ANCOVA) of Differences in Educational Achievement and Comparison of Gains for Longitudinal Cohort 1 and Cohort 2: Hood River Valley High School

| Source | Sex(S) | Year(Y) | S X Y | Covariate | Error | Gain(G) | G X S | G X Y | G X S X Y | Error |
|--------------------|---------|---------|-------|-----------|--------|---------|-------|-------|-----------|-------|
| <u>Reading</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 229 | 2 | 2 | 2 | 2 | 460 |
| Mean Square | 1065.31 | 1199.27 | 12.41 | 60882.88 | 217.93 | 2588.66 | 32.15 | 38.59 | 2.83 | 21.32 |
| F | 4.89 | 5.50 | .06 | 279.37 | | 121.43 | 1.51 | 1.81 | .13 | |
| P | .028 | .020 | .812 | <.001 | | <.001 | .222 | .165 | .876 | |
| <u>English</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 229 | 2 | 2 | 2 | 2 | 460 |
| Mean Square | 9239.42 | 402.79 | 97.43 | 45784.60 | 199.12 | 1163.14 | 49.84 | 94.73 | 97.83 | 17.48 |
| F | 46.40 | 2.02 | .49 | 229.93 | | 66.53 | 2.85 | 5.42 | 5.60 | |
| P | <.001 | .156 | .485 | <.001 | | <.001 | .059 | .005 | .004 | |
| <u>Math</u> | | | | | | | | | | |
| Degrees of Freedom | 1 | 1 | 1 | 1 | 229 | 2 | 2 | 2 | 2 | 460 |
| Mean Square | 49.10 | 48.49 | 1.25 | 35832.41 | 112.81 | 781.28 | 29.23 | 7.57 | 31.43 | 14.88 |
| F | .44 | .43 | .01 | 317.64 | | 52.49 | 1.96 | .51 | 2.11 | |
| P | .510 | .51 | .916 | <.001 | | <.001 | .142 | .602 | .122 | |

Table 7.32. Mean Mental Ability and Mean Educational Achievement for the 1977-78 Grade 12 Students Who Were Not Part of a Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 116 | 102.01 | 16.97 | 54.82 | 15.39 | 47.64 | 13.07 | 29.38 | 10.61 |
| Male | 59 | 105.53 | 17.13 | 55.07 | 16.50 | 45.14 | 13.83 | 31.08 | 10.51 |
| Female | 57 | 98.37 | 16.16 | 54.56 | 14.29 | 50.23 | 11.79 | 27.61 | 10.52 |
| 1st Quarter | | | | | | | | | |
| Total | 29 | 78.62 | 9.38 | 42.17 | 13.12 | 35.59 | 11.90 | 18.24 | 7.81 |
| Male | 12 | 79.53 | 9.16 | 45.08 | 11.29 | 30.33 | 7.75 | 19.17 | 5.70 |
| Female | 17 | 77.94 | 9.76 | 40.12 | 14.23 | 39.29 | 13.09 | 17.59 | 9.13 |
| 2nd Quarter | | | | | | | | | |
| Total | 29 | 99.79 | 2.99 | 51.93 | 13.52 | 47.00 | 11.85 | 28.00 | 8.23 |
| Male | 11 | 99.82 | 2.96 | 46.18 | 18.36 | 40.36 | 14.79 | 28.09 | 11.55 |
| Female | 18 | 99.78 | 3.10 | 55.44 | 8.27 | 51.06 | 7.53 | 27.94 | 5.76 |
| 3rd Quarter | | | | | | | | | |
| Total | 29 | 108.17 | 2.85 | 58.62 | 12.88 | 51.72 | 10.08 | 31.79 | 8.16 |
| Male | 18 | 108.89 | 2.89 | 56.22 | 14.76 | 48.50 | 10.71 | 32.39 | 8.13 |
| Female | 11 | 107.00 | 2.49 | 62.55 | 8.18 | 57.00 | 6.32 | 30.82 | 8.49 |
| 4th Quarter | | | | | | | | | |
| Total | 29 | 121.45 | 8.71 | 66.55 | 10.94 | 56.24 | 8.55 | 39.48 | 4.99 |
| Male | 18 | 122.94 | 10.22 | 66.00 | 13.43 | 54.56 | 9.76 | 39.56 | 5.23 |
| Female | 11 | 119.00 | 4.92 | 67.45 | 5.20 | 59.00 | 5.39 | 39.36 | 4.82 |

Table 7.33. Mean Mental Ability and Mean Educational Achievement for the 1978-79 Grade 12 Students Who Were Not Part of a Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 137 | 105.77 | 13.43 | 59.75 | 10.69 | 52.01 | 10.95 | 32.99 | 9.54 |
| Male | 60 | 107.33 | 11.24 | 58.80 | 10.94 | 48.72 | 11.38 | 33.02 | 9.44 |
| Female | 77 | 104.55 | 14.88 | 60.49 | 10.50 | 54.57 | 9.95 | 32.96 | 9.68 |
| 1st Quarter | | | | | | | | | |
| Total | 34 | 89.38 | 4.47 | 52.00 | 8.22 | 44.35 | 7.89 | 25.35 | 8.22 |
| Male | 10 | 90.40 | 4.12 | 51.80 | 7.77 | 40.90 | 8.05 | 28.50 | 7.91 |
| Female | 24 | 88.96 | 4.62 | 52.08 | 8.57 | 45.79 | 7.52 | 24.04 | 8.15 |
| 2nd Quarter | | | | | | | | | |
| Total | 34 | 100.12 | 2.58 | 56.82 | 8.63 | 48.71 | 9.86 | 30.53 | 7.23 |
| Male | 15 | 100.53 | 2.45 | 54.27 | 7.91 | 44.73 | 10.74 | 30.67 | 8.33 |
| Female | 19 | 99.79 | 2.70 | 58.84 | 8.84 | 51.84 | 8.06 | 30.42 | 6.47 |
| 3rd Quarter | | | | | | | | | |
| Total | 35 | 110.23 | 3.11 | 60.49 | 10.26 | 54.00 | 10.85 | 35.11 | 9.38 |
| Male | 19 | 110.32 | 3.38 | 57.68 | 11.91 | 49.26 | 11.83 | 32.89 | 11.62 |
| Female | 16 | 110.13 | 2.85 | 63.81 | 6.82 | 59.63 | 6.08 | 37.75 | 4.89 |
| 4th Quarter | | | | | | | | | |
| Total | 34 | 123.21 | 7.94 | 69.68 | 6.90 | 60.91 | 7.49 | 40.88 | 5.39 |
| Male | 16 | 120.75 | 5.18 | 68.75 | 6.75 | 56.69 | 8.36 | 38.19 | 6.19 |
| Female | 18 | 125.39 | 9.38 | 70.50 | 7.11 | 64.67 | 3.96 | 43.28 | 3.12 |

Table 7.34. Mean Mental Ability and Mean Educational Achievement for the 1977-78 Grade 11 Students Who Were Not Part of Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 137 | 105.77 | 13.43 | 56.32 | 11.54 | 49.38 | 11.38 | 31.53 | 9.06 |
| Male | 60 | 107.33 | 11.24 | 55.58 | 10.53 | 46.35 | 12.00 | 32.12 | 8.84 |
| Female | 77 | 104.55 | 14.88 | 56.90 | 12.31 | 51.74 | 10.35 | 31.06 | 9.25 |
| 1st Quarter | | | | | | | | | |
| Total | 34 | 89.38 | 4.47 | 46.91 | 10.62 | 40.62 | 9.11 | 23.79 | 7.51 |
| Male | 10 | 90.40 | 4.12 | 46.30 | 7.35 | 36.80 | 11.73 | 25.30 | 6.62 |
| Female | 24 | 88.96 | 4.62 | 47.17 | 11.85 | 42.21 | 7.51 | 23.17 | 7.90 |
| 2nd Quarter | | | | | | | | | |
| Total | 34 | 100.12 | 2.58 | 52.76 | 8.82 | 45.97 | 10.47 | 28.06 | 7.32 |
| Male | 15 | 100.53 | 2.45 | 49.27 | 7.18 | 40.80 | 10.63 | 27.67 | 8.21 |
| Female | 19 | 99.79 | 2.70 | 55.53 | 9.18 | 50.05 | 8.55 | 28.37 | 6.75 |
| 3rd Quarter | | | | | | | | | |
| Total | 35 | 110.23 | 3.11 | 59.26 | 8.60 | 52.80 | 8.82 | 34.29 | 5.71 |
| Male | 19 | 110.32 | 3.38 | 57.26 | 9.36 | 49.89 | 9.85 | 34.21 | 6.93 |
| Female | 16 | 110.13 | 2.85 | 61.63 | 7.17 | 56.25 | 6.06 | 34.38 | 4.01 |
| 4th Quarter | | | | | | | | | |
| Total | 34 | 123.21 | 7.94 | 66.26 | 8.20 | 58.03 | 8.97 | 39.88 | 6.36 |
| Male | 16 | 120.75 | 5.18 | 65.31 | 6.99 | 53.31 | 10.14 | 38.06 | 8.16 |
| Female | 18 | 125.39 | 9.38 | 67.11 | 9.26 | 62.22 | 5.08 | 41.50 | 3.73 |

Table 7.35. Mean Mental Ability and Mean Educational Achievement for the 1979-80 Grade 10 Students Who Were Not Part of a Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 149 | 95.05 | 14.91 | 50.99 | 12.92 | 45.40 | 12.76 | 27.70 | 9.38 |
| Male | 83 | 93.93 | 15.93 | 49.29 | 13.15 | 41.57 | 12.83 | 26.34 | 9.69 |
| Female | 66 | 96.47 | 13.50 | 53.12 | 12.38 | 50.23 | 10.99 | 29.42 | 8.73 |
| 1st Quarter | | | | | | | | | |
| Total | 37 | 76.11 | 7.75 | 39.27 | 11.90 | 33.46 | 9.91 | 19.54 | 6.04 |
| Male | 24 | 75.46 | 8.83 | 38.83 | 12.29 | 29.96 | 8.62 | 18.54 | 5.95 |
| Female | 13 | 77.31 | 5.33 | 40.08 | 11.57 | 39.92 | 9.06 | 21.38 | 6.01 |
| 2nd Quarter | | | | | | | | | |
| Total | 38 | 90.53 | 2.35 | 49.61 | 9.73 | 42.24 | 10.80 | 24.37 | 7.83 |
| Male | 21 | 90.90 | 2.17 | 48.14 | 11.18 | 38.52 | 11.77 | 22.57 | 8.24 |
| Female | 17 | 90.06 | 2.54 | 51.41 | 7.52 | 46.82 | 7.50 | 26.59 | 6.89 |
| 3rd Quarter | | | | | | | | | |
| Total | 37 | 99.65 | 2.95 | 53.73 | 10.04 | 50.03 | 9.23 | 30.22 | 7.56 |
| Male | 20 | 99.30 | 3.05 | 52.30 | 9.68 | 47.20 | 6.89 | 29.25 | 6.90 |
| Female | 17 | 100.06 | 2.86 | 55.41 | 10.49 | 53.35 | 10.66 | 31.35 | 8.33 |
| 4th Quarter | | | | | | | | | |
| Total | 37 | 114.05 | 7.48 | 61.38 | 9.18 | 55.97 | 8.49 | 36.78 | 5.77 |
| Male | 18 | 116.11 | 7.39 | 61.22 | 7.78 | 54.33 | 8.08 | 37.89 | 4.21 |
| Female | 19 | 112.11 | 7.21 | 61.53 | 10.55 | 57.53 | 8.79 | 35.74 | 6.89 |

Table 7.36. Mean Mental Ability and Mean Educational Achievement for the 1980-81 Grade 10 Students Who Were Not Part of a Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 132 | 94.04 | 15.50 | 49.58 | 14.62 | 46.15 | 14.02 | 26.55 | 9.70 |
| Male | 61 | 92.70 | 13.33 | 46.48 | 14.18 | 41.44 | 14.39 | 25.25 | 10.57 |
| Female | 71 | 95.18 | 17.16 | 52.25 | 14.56 | 50.20 | 12.42 | 27.68 | 8.80 |
| 1st Quarter | | | | | | | | | |
| Total | 33 | 74.33 | 7.08 | 37.76 | 12.41 | 33.45 | 11.67 | 17.24 | 7.23 |
| Male | 16 | 76.63 | 6.04 | 37.06 | 10.37 | 28.44 | 8.52 | 15.31 | 5.65 |
| Female | 17 | 72.18 | 7.48 | 38.41 | 14.37 | 38.18 | 12.47 | 19.06 | 8.20 |
| 2nd Quarter | | | | | | | | | |
| Total | 33 | 88.64 | 2.46 | 46.91 | 11.83 | 44.15 | 11.67 | 25.79 | 8.10 |
| Male | 19 | 88.95 | 2.44 | 45.47 | 12.51 | 42.84 | 13.22 | 27.21 | 8.75 |
| Female | 14 | 88.21 | 2.52 | 48.86 | 11.00 | 45.93 | 9.35 | 23.86 | 6.96 |
| 3rd Quarter | | | | | | | | | |
| Total | 33 | 99.33 | 3.20 | 51.88 | 13.16 | 50.06 | 11.14 | 28.97 | 7.29 |
| Male | 19 | 99.64 | 3.73 | 47.50 | 14.21 | 44.71 | 11.87 | 26.71 | 9.12 |
| Female | 14 | 99.11 | 2.83 | 55.11 | 11.67 | 54.00 | 8.95 | 30.63 | 5.24 |
| 4th Quarter | | | | | | | | | |
| Total | 33 | 113.85 | 7.27 | 61.79 | 9.86 | 56.94 | 10.07 | 34.21 | 7.58 |
| Male | 12 | 112.00 | 4.97 | 59.42 | 11.88 | 52.75 | 13.25 | 33.67 | 10.58 |
| Female | 21 | 114.90 | 8.23 | 63.14 | 8.52 | 59.33 | 7.02 | 34.52 | 5.48 |

Table 7.37. Mean Mental Ability and Mean Educational Achievement for the 1980-81 Grade 11 Students Who Were Not Part of a Longitudinal Cohort: Hood River Valley High School

| | N | Mental Ability | | Reading | | English | | Math | |
|-------------|-----|----------------|-------|-----------|-------|-----------|-------|-----------|-------|
| | | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD | \bar{X} | SD |
| Total | 149 | 95.05 | 14.91 | 54.60 | 13.00 | 47.66 | 13.50 | 29.72 | 9.86 |
| Male | 83 | 93.93 | 15.93 | 53.30 | 13.67 | 43.87 | 13.88 | 28.83 | 10.01 |
| Female | 66 | 96.47 | 13.50 | 56.23 | 12.01 | 52.44 | 11.41 | 30.85 | 9.61 |
| 1st Quarter | | | | | | | | | |
| Total | 37 | 76.11 | 7.75 | 43.03 | 12.13 | 34.68 | 10.78 | 20.49 | 6.56 |
| Male | 24 | 75.46 | 8.83 | 42.33 | 12.62 | 31.21 | 10.03 | 19.96 | 6.67 |
| Female | 13 | 77.31 | 5.33 | 44.31 | 11.54 | 41.08 | 9.36 | 21.46 | 6.50 |
| 2nd Quarter | | | | | | | | | |
| Total | 38 | 90.53 | 2.35 | 51.32 | 10.75 | 44.63 | 11.71 | 27.11 | 8.56 |
| Male | 21 | 90.90 | 2.17 | 50.19 | 12.60 | 40.05 | 11.72 | 26.24 | 8.41 |
| Female | 17 | 90.06 | 2.54 | 52.71 | 8.05 | 50.29 | 9.17 | 28.18 | 8.88 |
| 3rd Quarter | | | | | | | | | |
| Total | 37 | 99.65 | 2.95 | 59.49 | 8.26 | 53.24 | 9.30 | 32.59 | 7.14 |
| Male | 20 | 99.30 | 3.05 | 59.15 | 8.36 | | 8.52 | 32.30 | 6.31 |
| Female | 17 | 100.06 | 2.86 | 59.88 | 8.37 | | 52 | 32.94 | 8.20 |
| 4th Quarter | | | | | | | | | |
| Total | 37 | 114.05 | 7.48 | 64.65 | 9.14 | 58.19 | 8.73 | 38.78 | 6.49 |
| Male | 18 | 116.11 | 7.39 | 65.06 | 7.26 | 57.61 | 7.15 | 39.83 | 5.84 |
| Female | 19 | 112.11 | 7.21 | 64.26 | 10.82 | 58.74 | 10.18 | 37.79 | 7.07 |

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